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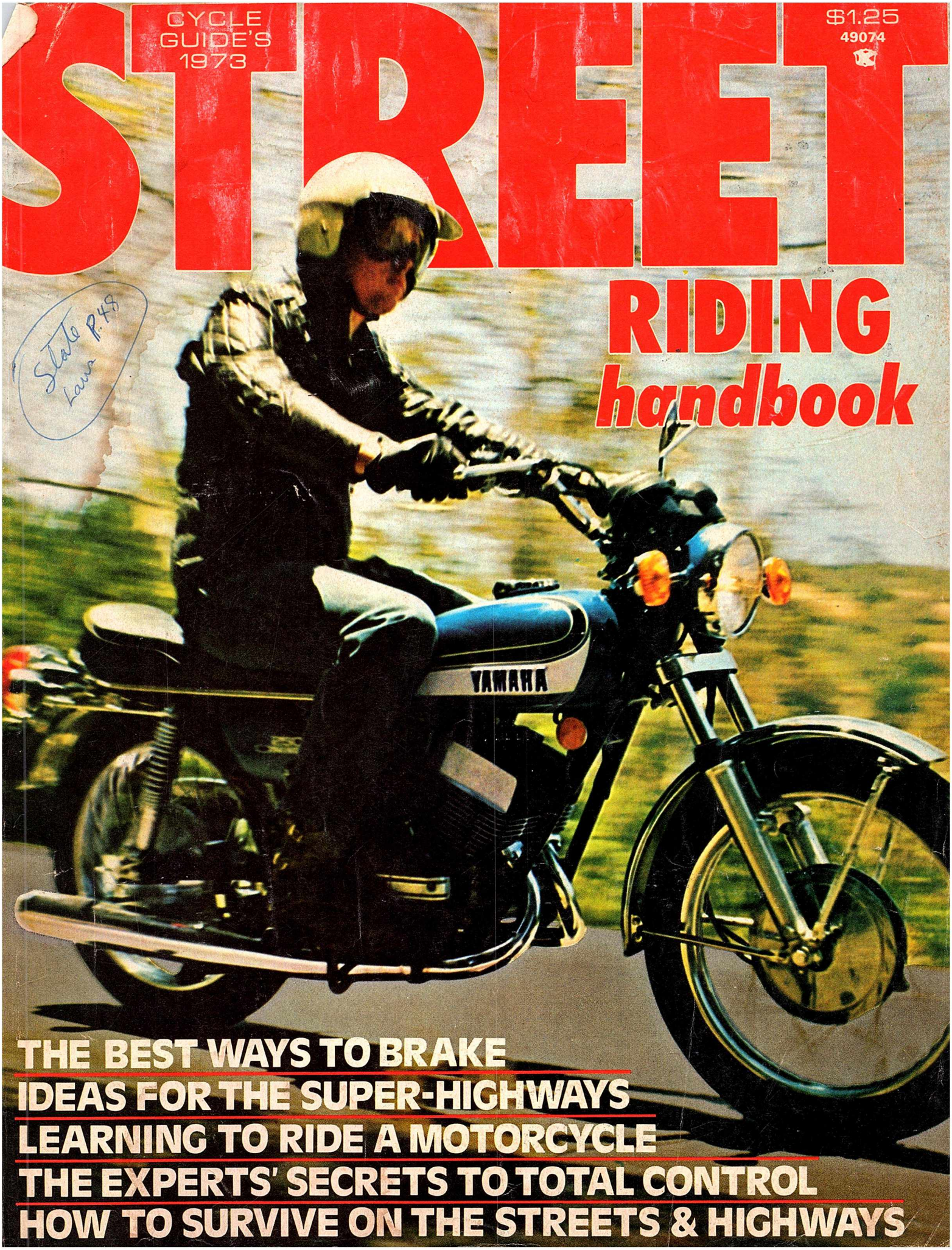

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CYCLE GUIDE'S

STREET RIDING *handbook*

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THE RIGHT TO RIDE?

As physical as the 'beast' may seem, most of the art of motorcycle riding is purely mental!

Virtually anyone who can ride a bicycle can qualify for the special motorcycle rider's license if he is willing to spend a few hours reading the special sections of the motor vehicle code that apply to motorcycles and a few practice laps around a parking lot. A dozen states don't even require that level of two-wheeled ability; a valid automobile driver's license is enough to make you an ''expert'' motorcyclist as well. Strangely enough, *every* state requires some form of vehicle safety device or inspection but the rider's ability is, apparently, assumed to be less questionable than the machines. Personally, I feel that you have the right to kill yourself if you so desire, just as long as you don't take anyone else along with you. I also feel that nobody but a damn fool rides a motorcycle anywhere at any speed without a crash helmet, but I don't feel that it's up to the 'state' to force you to wear one. I don't feel that it's the state's responsibility to make you a good rider either but I do find it ironic that motorcycle riding is considered to be so simple as the various driver's license tests (or lack of them) indicate.

The only groups that have 'license' tests are the various city and state police and sheriff's departments for their own ''motor'' officers. *After* an officer has proven himself to be a virtually accident-free *professional* patrol car driver for four years (often 200,000 or more miles) THEN he is qualified to attempt to pass the motorcycle training program—even then over a third of these professional and, to say the least, expert drivers fail to make it as motorcycle riders! There's a lot more to learning to ride the road than the license tests would suggest—a whole lot more!

If you forget everything else in this book, remember these two facts: most motorcyclists are *totally* invisible to other drivers; and that sprightly and supple two-wheeler will only stop *or* corner about two-thirds as quickly as an automobile! At the outset, then, the odds are most definitely against you as a motorcycle rider since you can't match the cars' stopping or cornering abilities and, worse, you and your machine simply are not seen! If you bought a motorcycle because you wanted to be seen or because you thought you were getting a machine that could out-handle an automobile your ego should be reeling if your eyes are still reading. There is a possible combination of balances to these two disadvantages or the street-life of the motorcyclist would be less than a week. *If* you are intelligent enough to want to put the odds in your favor on the road you most certainly can. You can, in equal fact, make yourself and your machine a truly safer combination than *any* car or driver whether that car is a road racing Gran Prix machine or one of the Feds' ''padded-cells-on-wheels.'' Just thinking you have an accident-avoider between your legs won't make it happen—the *only* thing that will make a road-going motorcycle and rider a safe pair is a combination of *perfect* machinery and *total* concentration on the part of the rider *every* moment he rides.

The moment you swing your leg over the tail light you had best be ready to forget everything else that's on your mind from that moment until you switch the thing off and swing your leg back over. Those other drivers don't know it themselves, but, buddy, they're out to get you and they've got a better weapon to do the job with. One of *your* advantages is that you know it and they (usually) don't—if you forget, too, then eventually you'll get it. Even that friendly-feeling empty highway has your number if you let your attention waver—roads are designed to be safe for cars, not motorcycles, and that's just the way they've turned out to be.

Before you laugh all of this verbiage off as mere ''scare'' tactics to get your attention consider some of the facts that I and a few hundred other far more expert riders have accumulated in twenty years and literally hundreds of thousands of miles of accident-free *and* accident-riddled road riding. So far, no one has spent the time or money to make a survey of the riding habits and training of private motorcycle owners and riders because, frankly, no one really cares enough to spend the bucks to do so. The folk who spend your tax dollars do care, though, because they have to account to their superiors and, eventually, to you.

There are more roads and more cars and motorcycles per person in California and, particularly, in Los Angeles than anywhere else in the world. The motorcycle divisions of the California Highway Patrol and the City of Los Angeles Police Departments, then, could be considered the best there are, just on the basis of sheer numbers. Both agencies have motorcycle training schools for their 'motor' officers that are the acknowledged models for the rest of the country. The CHP and LAPD know how to teach a man to ride a motorcycle safely and they have the statistics and accident reports and even their own repair shops to check to see if their training is really doing the job they intend it to. I talk to, rode with, talked about and generally lived with a half-dozen officers from both the LAPD and the CHP *each* of whom had ridden more than twenty years and/or more than 200,000 miles without a *single* accident of any kind! If you doubt what they say then you'd better have that kind of experience to back up your *opinions.* What you need to survive on the road aboard a motorcycle in today's traffic conditions are *facts* and that's what you're getting.

A motorcycle is so obviously different from a car that most of us just leave it at that without thinking that the two-wheeler is controlled far differently than a car too. The best automobile drivers are not necessarily even fair motorcycle riders; the example of a third of the highway patrol and motorcycle police drivers failing to make it as motor officers should give you a hint about that. The facts are even more diverse from any automobile driving experience; you don't steer a motorcycle, you don't work any of the controls with the same hand or foot movements and the response to any effort at the controls is totally different.

If anything, motorcycle riding is more like flying an airplane than it is driving. It takes hundreds of hours for most competent drivers to earn a pilot's license and it should take nearly as long to really learn to control a motorcycle. The consequences of an

airplane crash may be more severe than those of a spill on a motorcycle but neither one is remotely relative to any automobile experience you may have. It's doubly unfortunate, then, that obtaining a driver's license for a motorcycle seems so similar to obtaining one for a car. The sooner you can isolate your riding from anything you've learned about driving, the sooner you'll become competent as a rider!

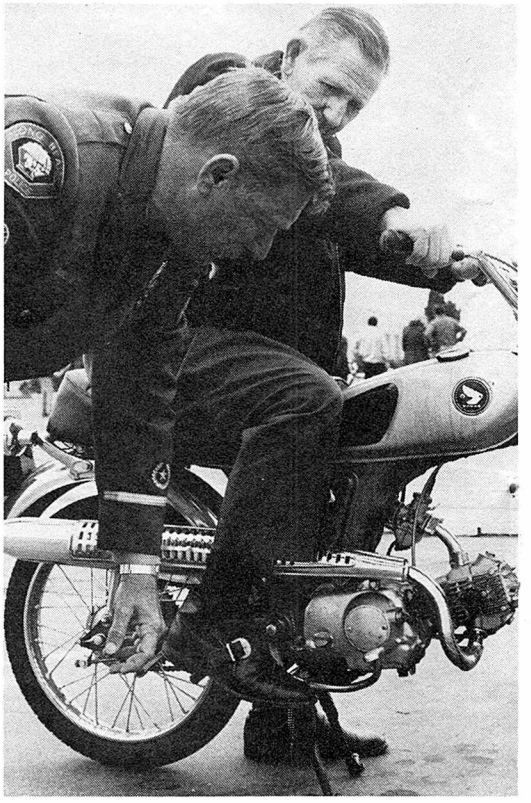
The ONLY way you can really learn to ride a motorcycle is to become a true part of the machine. There are dozens of subtle differences between total control and fighting the motorcycle's natural handling characteristics that can only be learned through the experience of thousands of miles of riding. Most of the better riders we've talked to, including international champion road racers, are only aware of the fact that they 'feel' what the machine is doing. Any feeling is difficult to describe without riding along on the seat behind you to hear your reactions and to feedback errors and encouragement for correct feelings—obviously a nearly-impossible thing to do, even at a riding school. We'll have to settle for a brief description of the physics of the whole thing and let you do your own learning through experience.

A rolling, upright motorcycle has a natural balance born from the machine's gyroscopic stability. That's something you learn quickly enough if you forget to put your feet down just before the machine comes to a full stop. Learning to make that stability work *for* you, though, only comes with the confidence earned by experience. Step a long way ahead, from your first flounderings in a parking lot to a high-speed trip down the expressway and we'll give you one example of how that gyroscopic stability works for you: traversing those wiggly cuts in modern concrete called ''rain grooves'' to give *automobiles* better traction in the rain. These snake-like grooves will set the front wheel of nearly any motorcycle wobbling a bit from side to side. If you try to fight your way through them, correcting each wiggle at the bars with a bit of opposing force from your arm there's a better than even chance you'll over-correct and set the motorcycle into a totally out-of-control high-speed wobble that'll get bad enough to flip you right over the bars—it's happened to hundreds of riders already! If you know your machine's basic feel, however, you can simply sit tight and ''know'' whether to slow down a bit, speed up a bit, or just to let it cruise along *without,* in any case, any direct correction through the handlebars.

If you expect to connect yourself with your two-wheeled gyroscope and with the various levers that control it then learn the best place to sit on the machine with both feet on the pegs. Viewed from the side, that ''best'' place may find your fanny anywhere from snug against the front of the tank to as far back on the saddle as your arms will reach—all depending on your weight, the machine's center of gravity, the presence of wind, your speed, the condition of the road, whether you're cornering or not and a dozen other factors; in other words, where you place your fanny will vary a lot and each ''best'' place can only come with many miles of practice. When viewed from dead ahead or from the side, however, there is only one right way to sit on a motorcycle for any road conditions and for straights or the tightest and fastest of any corners; your spine should be directly parallel with the centerline of the motorcycle. An imaginary line drawn straight up from where either tire touches the ground to the base of your skull should be absolutely straight and vertical.

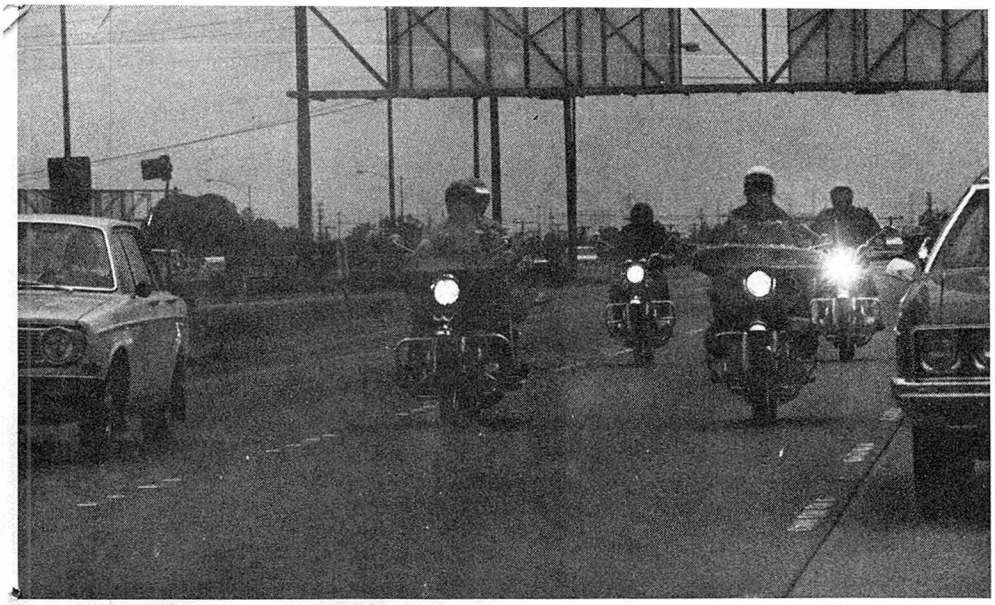
Yes, there're photos in this book of road racers leaned way off the sides of their machines and moto-crossers and other off-road racers clamber about their motorcycles like monkeys but those are exceptions that prove the rule. The road racers lean off their machines because they are so intimate with their mount's behavior that they know which side to climb to, when and why. Forget whatever you know about off-road racing, whether it be moto-cross or whatever, because little of that knowledge applies to riding on the road. Fidget back and forth across the length of the saddle as you must to get the best feel of the machine under varying conditions but *always* keep your backbone directly above the machine. It's a complicated way of simply saying, ''Lean *with* the machine''; don't lean any less than it is in a corner and don't lean any more. It's the toughest single lesson in road riding on a motorcycle because all your reflexes want to move your body into a vertical position when the machine leans through a corner—that's what you do in a car *and* that's what the off-road motorcycle racers do.

You've spent your entire life training your body to stay upright, and now you've got to reprogram it to

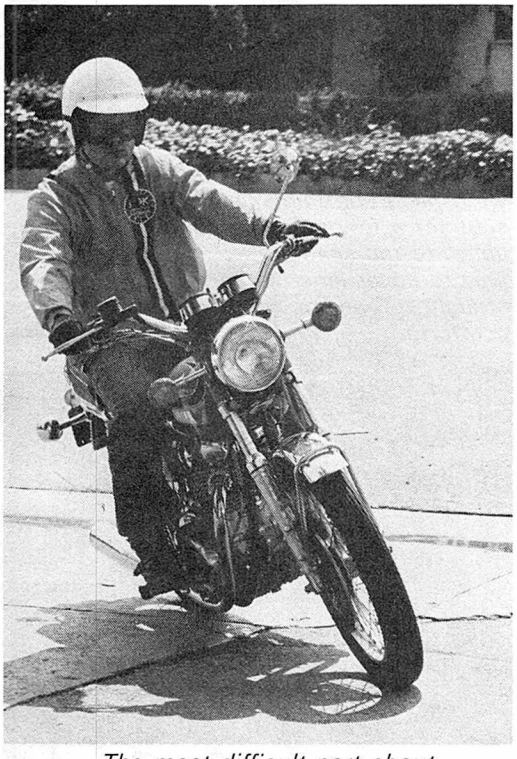


A parking lot, particularly one that's free of those concrete bumpers, is the very best place to learn to ride. Check with your local highway patrol, police, or sheriff's office to see if they offer training schools.

Your best friend: your rear view mirrors, and your worst enemy: the road itself. The tiny contact patches of a motorcycle's two tires are super-sensitive to changes in road texture or to water and oil.



It's a hard fact to live with but face it now: motorcycles are invisible *to most motorists. Riding with your headlights on, even in bright daylight, helps and* you *have to be the one to watch for trouble.*



The most difficult part about learning to ride on the streets and roads is learning to lean the machine rather than to steer it with the handlebars to make it turn, and *to learn to lean with it.*

''trust'' what that machine between your legs is telling it to do. Your personal equilibrium *must* give way to the equilibrium and gyroscopic balance of the combination of you *and* the motorcycle or you'll never, ever turn any corner at any speed with complete control!

The motorcycle's steering geometry and suspension play an important part in cornering but, again, in a role totally unlike that of a car. Most of the actual ''steering,'' however, is a direct result of the fact that there are only two tires, that the machine *must* lean through a corner to maintain its gyroscopic stability (take a physics course if you must know the ''why?'' to that one!) and to the fact that the tires are rounded as viewed from the direct front or rear of the machine. The roundness of the tire gives it the greatest diameter at the exact center of the tread. If you measure the tire's diameter an inch or so to the left or right of the exact center of the tread you'll find it's a fraction of any inch smaller than at the center. That first large diameter and that second smaller diameter are the same measurements you'd get if you were to measure, for example, a giant paper cone drinking cup: the diameter would get smaller and smaller as you inched down toward the cone's bottom point.

Well, as you may have already guessed, that's how a motorcycle's tire works to make the machine ''automatically'' turn as you lean it over.

If you still don't see it, try rolling a paper cone straight across a table top—it will always want to spin around in a small circle *unless* you can somehow get to balance on the upper lip. Try it with your motorcycle too—lean the machine over about 45 degrees and hold the bars so the front wheel is pointing straight ahead (directly in line with the rear as it would be when rolling straight down the road)—you'll find that the motorcycle will ''naturally'' roll in a large-radius circle when it is leaned over. If you

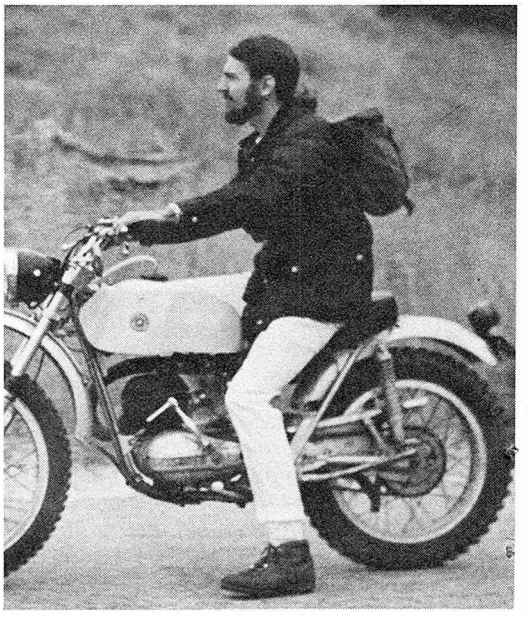
Many of the motorcycle importers, particularly Yamaha and Honda, offer parking lot beginning rider courses at little or no charge. You'll learn the fundamentals including some exposure to hazards like water.

lean it even further (until the foot pegs or center stand are almost touching the pavement) you'll find it will roll in an even smaller diameter circle. The further you lean the machine from vertical, then, the tighter the circle it will roll in even with the ''steering'' locked-in on straight-ahead. Understand this ''cone'' phenomenon of motorcycle tires and you'll be most of the way there towards understanding how and why your machine handles the way it must.

The ONLY motorcycles that use flat-treaded tires like those on a car are the strictly racing quarter-mile dragsters and, then, only on the rear BUT these machines are only meant to be ridden in a straight line! What

Narrow and low-mounted handlebars that the road racers use to help cheat the wind with footpegs moved rearward to give a lean-into-the-wind riding crouch—for experts only!

Standard handlebars and a larger windshield and fairing may subtract a few miles an hour from absolute top speed but it is THE way to cover long distance of straight or winding roads in comfort.

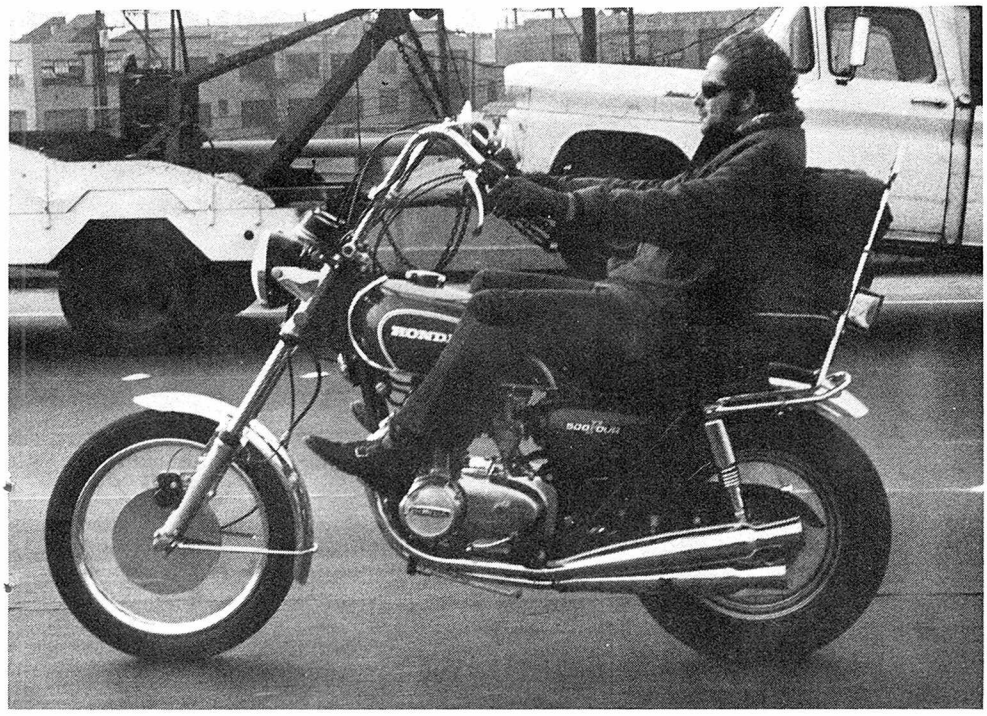


A small back pack and a waterproof jacket can be your tickets to freedom aboard any motorcycle for hours or days of riding with *the road not on it. You can't help but become one with your route.*

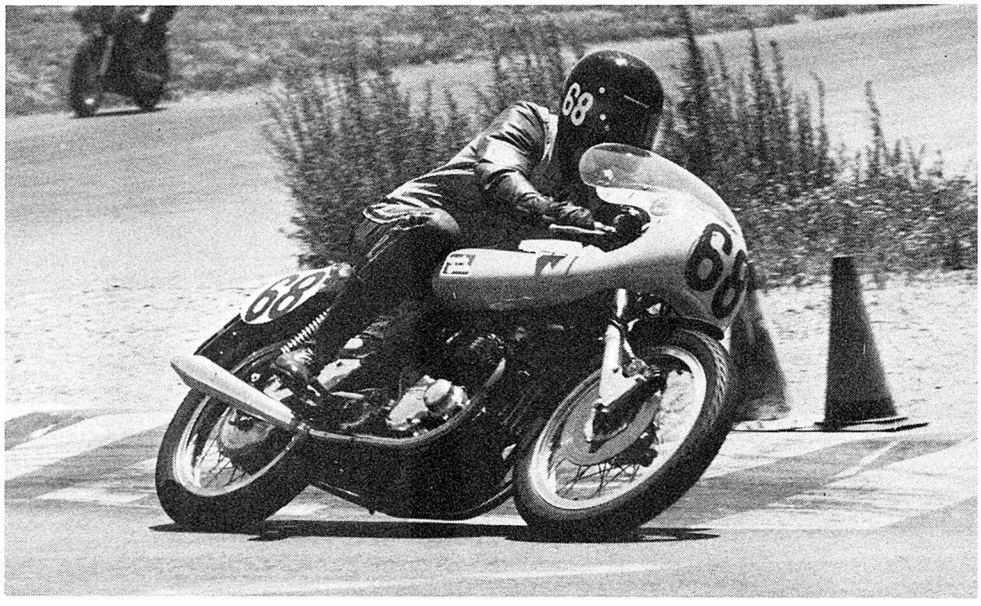
you've just learned, when applied to actually road-riding, is that any motorcycle does not have to be "steered" through corners—most of your cornering will be done by learning to lean the machine over to the right when you want to make a right turn and to lean it to the left when you want to make a left turn. Once again, you have to train your equilibrium to do something that you've told it not to since birth! Your natural reflexes will tell you that if you lean the motorcycle over to the side it's going to fall over. If you're at a standstill that's true, but if you're rolling along at even a walking pace the thing will simply start to turn into the direction and leaned it. Practice the effect of lean on cornering and learn how much different angles of lean can effect the "natural" radius of the corner the machine will "automatically" take on a giant and empty parking lot until you begin to get the idea of the thing. Just remember to keep the front wheel pointed straight ahead every time.

The knack of turning without actually steering is even harder to learn than that of leaning your torso *exactly* the same amount as the machine leans. It's probably not one bit easier than teaching a right-hander to throw a baseball as well with his left hand. The feeling of falling as you lean the machine to negotiate a simple right hand turn is frightening.

Overcoming the tendency for your



The chopper fan takes another approach to road riding. In some *cases slightly extended front forks will make a machine more stable on the straightaway but they always upset cornering balance.* IF *style were no consideration the chopper could be correctly considered to be the interstate express. The short-barred ''café racer''-modified machines generally reflect their owner's greater interest in quick corners than in long straight stretches. Keep it stock until you learn how to ride!*



The headlight on this factory-option-equipped Norton is covered with a fiberglass plate and number for road racing. With the numbers off, the machine is the epitome of a ''cafe racer'' for winding public roads.

Those high-mounted 'sissy' bars are the in-thing these days. If you (and your passenger) really do lean back against them for comfort your machine's handling and balance are far less than with the normal sitting stance. Again, they usually identify their owner as one who prefers style and/or straight-road travel. Saddlebags are a far better place to stow camping gear.

body to stay vertical while the machine leans is even *more* frightening—like starting to trip and fall forward than leaning even further forward to catch your balance—just keep reminding yourself that it's NOT your balance you're worried about but the combination of you and the machine and the machine MUST lean to corner. You may have the fastest, the best-stopping, the lightest, the most expensive motorcycle money can buy and you may know how to work the throttle, the clutch, the gear lever, and the brake levers with the finesse of a piano virtuoso. You may even know how to coordinate the throttle with silky smooth gear changes up and down and be able to feather the front and rear brakes to the very brink of slide. BUT, if you cannot master the inhuman experience of leaning the machine *and* leaning right with it to corner, you will *never* know what motorcycle road riding is all about. You may be able to drive an automobile at 200 miles an hour around Daytona or you may have driven 500,000 miles or more without any kind of accident so perfect are your reactions and your accident-avoidance awareness. If you aren't comfortable in leaning your body and your motorcycle through corners then you'll crash at 20 miles an hour or within 50 miles—if you don't, it's only because you're lucky, *not* because you know how to ride a motorcycle. Frankly, some people just can't convince their life-long equilibrium to trust the motorcycle instead of mother nature; if you're one of those then face it and forget motorcycle road riding. Maybe motocross or automobile racing may be your thing but road riding is not!

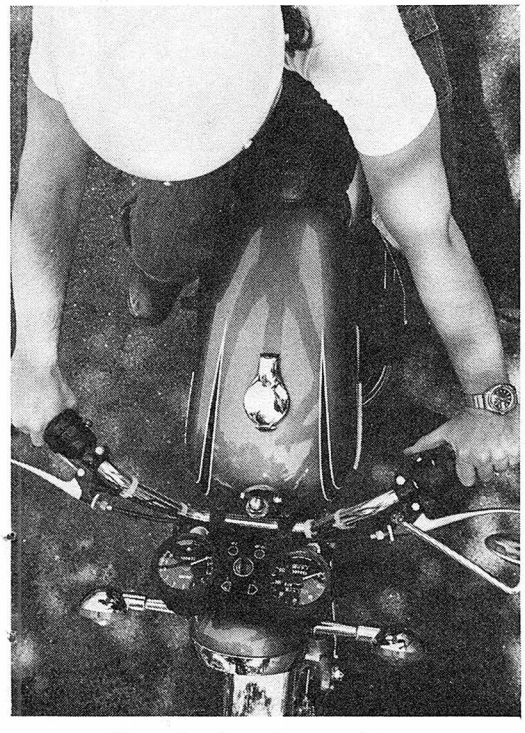
LEARNING THE LEVERS

For the new rider, control can begin at home.

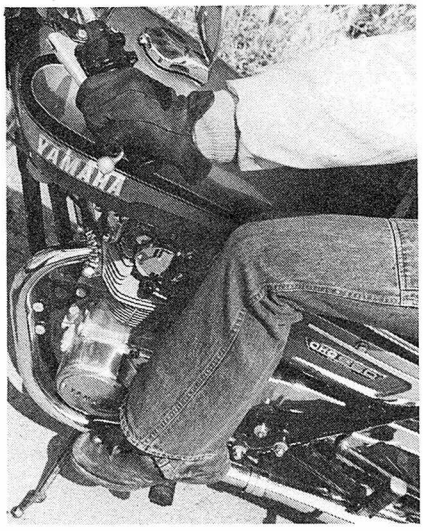
The first phase of learning to ride is certainly the easiest: just play with the machine until it becomes familiar to you. Swing the motorcycle up onto its center stand (if it has one), or block up the foot pegs with some wooden milk bottle cases so you can sit on it without it falling over. Then, do just that. We really didn't have to tell you, did we? The most natural thing in the world for any new motorcycle owner to do is to sit on the machine and take some wild and imaginary flights down the road. Fine: do it, and do it, and do it. Every chance you have, get on the thing and go through a complete ride. Do *everything* (short of actually starting the engine) that you would have to do to ride the machine while it sits quietly in your garage or driveway.

One of the strangest things about motorcycle design is that, so far, there is no standard location for the controls. The throttle is usually incorporated into the right handgrip—twist it down, or counterclockwise, viewed from the end of the bar, for more throttle and more speed. Your owner's manual will locate the clutch, gear shift and brake levers for your particular machine. If you didn't get one, hustle down to your dealer and buy one or have the previous owner identify how each of the controls operates and make some clear notes and sketches of your own. With the exception of some of the 90cc or smaller trail bikes and mini-cycles and some of the pre-1955 machines, the lever on the right side of the handlebar operates the front brake. It should also operate the stop light through a switch that's built into the cable. If yours doesn't, invest a few dollars in a new cable *with* a built-in stop light switch and wire it to the stop light. The lever on the left side operates the clutch. There will likely be a few more smaller levers and/or buttons on the bars that can operate the choke, horn, turn signals, high-low beams and, perhaps, a lever to operate a compression

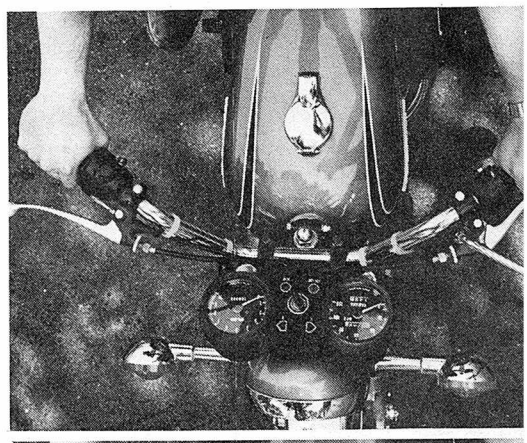
Long Beach (California) Police Department officer Bob Garrene has been conducting motorcycle riding schools for the city's Safety Council for years. Part of his method includes engine-off use of the controls.

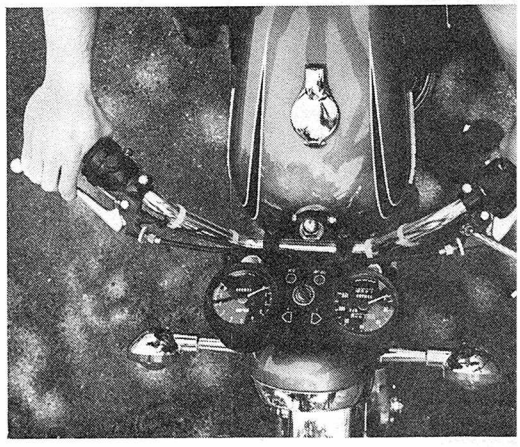


If you're learning to ride on your own machine you should adjust the handlebars, clutch lever, brake lever, shift pedal and brake pedal to fit your riding stance. Try to sit at least ⅔ toward the front.



Set the machine up on its centerstand and practice coordinating the operation of the controls. Gearshifting requires that the clutch be pulled in just a fraction of a second before your toe presses the pedal.

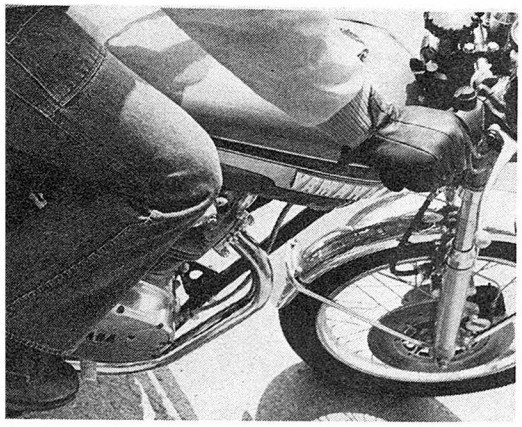


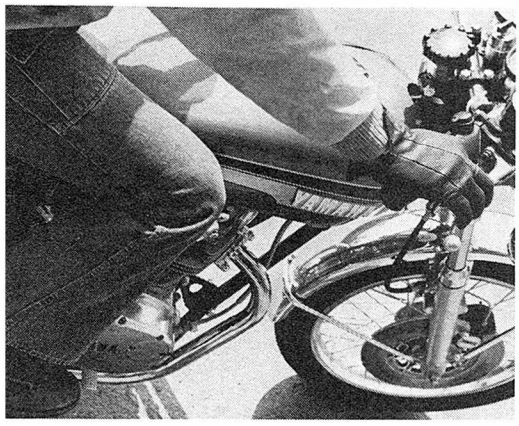


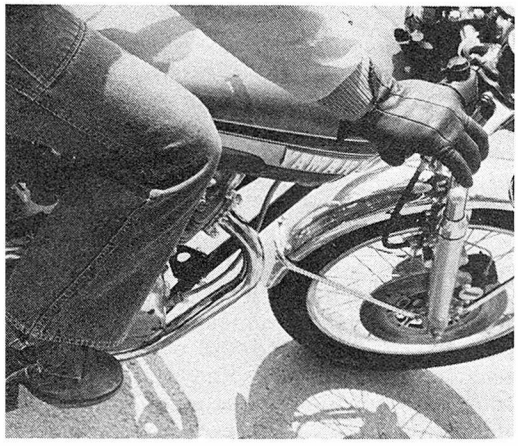
You must learn to turn the throttle at least a quarter to a half-turn with just pressure from your thumb and the palm of your hand while your right fingers control the front brake. Often, both brake and clutch are needed.

release or a button to kill the ignition to stop the engine or a lever to operate the driving lights. You really will need an owner's manual to find out what each of them does—some of them may not even be connected to anything!

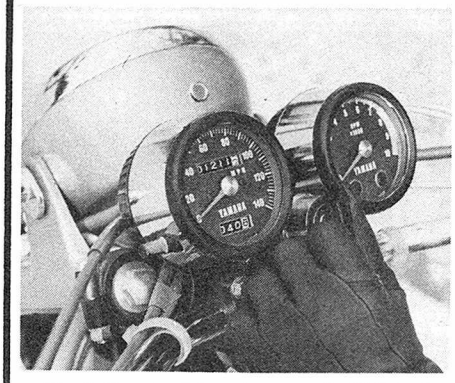
The only lever that's likely to throw you is the compression release. Very few motorcycles are fitted with these and, if yours doesn't have one, the chances are it doesn't need one, so forget about it until you become far more familiar with the machine. The compression release is a device that serves two entirely different functions for two different types of motorcycles. On a few 250cc or greater displacement four-strokes, the compression release lever pulls a cable that, in turn, pulls a lever on the cylinder head that lifts the intake valve a fraction of an inch to lower the compression ratio so the engine requires less effort at the kickstarter to kick over. The ONLY time you want to pull that lever on a four-stroke is when you kick-start the machine and, even then, it should be let fully out before your



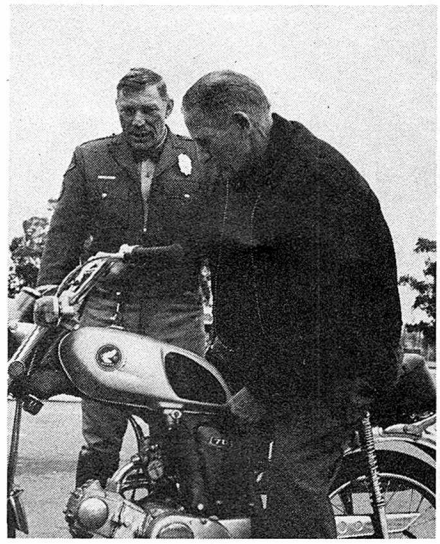


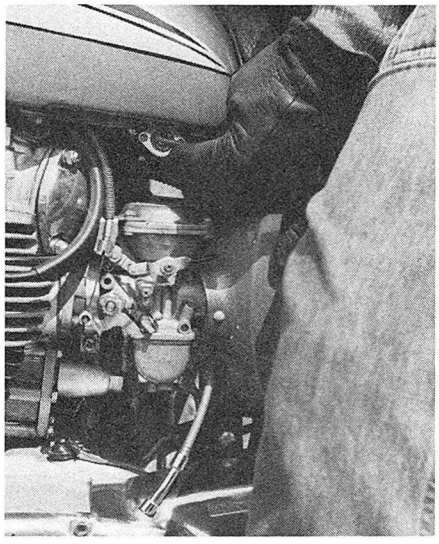


The front brake does most of the stopping but it must be used in conjunction with the rear. Learn to operate the two brakes together and independently without pressure on one 'forcing' you to push the other.

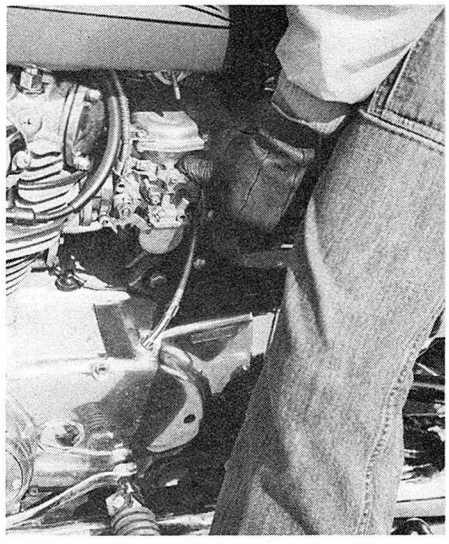


Find the ignition key and, if it's in a different place, the switch or button to kill the engine in an emergency. Learn by feel whether the switch is on, off, locked or in a lights-on position.





There's no standard ignition switch or location on different motorcycles and there's no standard fuel petcock. Again, learn by feel when the petcock is ''on,'' ''reserve,'' or ''off'' and use both if there are two.



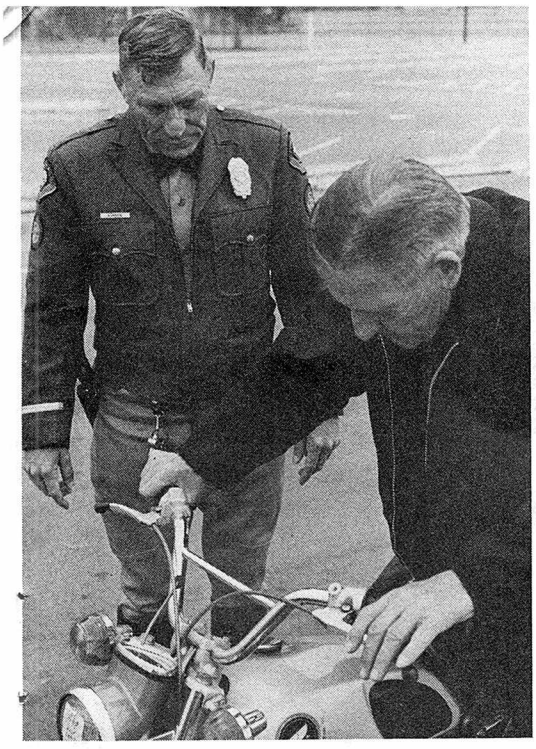
Some machines must be ''primed'' before starting by tickling a button near where the fuel line fits the carburetor. Most must be choked when the engine is cold. Your *owner's manual will show you where and how.*

foot reaches the bottom of the kick-starter's travel.

Just to confuse things for you, it would seem at this point that some of these same bikes may have yet another lever (particularly on machines that were built before the seventies) that is used to retard the ignition timing for easier starting. A few two-strokes that are intended primarily for off-road use have a compression release too, but this one is used as an additional brake lever for easier steep downhill descents. This one is like a tiny spring-loaded intake valve and is placed in the cylinder head. Pulling the lever on a two-stroke engine's compression release turns the engine into an air pump, when decelerating and braking, to slow the machine—it is *never* used for starting the engine. If in doubt, again, consult the owner's manual.

The foot pedals on the right and left sides of the engine control the gear shifting and the rear brake operation. There is, unfortunately, no standard as to which side the brake should be and which side the gear shift should be on. Obviously, if a cable or rod leads from the rear of the pedal to the rear brake, then that's the brake pedal and the one on the other side of the engine must be the gear shift pedal. The gear shift pedal, once you've discovered which side of your machine it's on, is another source of non-standardization. On some machines you move the lever up to go from first to second to third, etc., while on others the shift pattern is reversed so that you must push down to select the next higher gear. Neutral is usually between first and second but it can be below first on some brands. That owner's manual is the best place to find out about the shift pattern for your particular machine.

All motorcycles (finally, a standard)



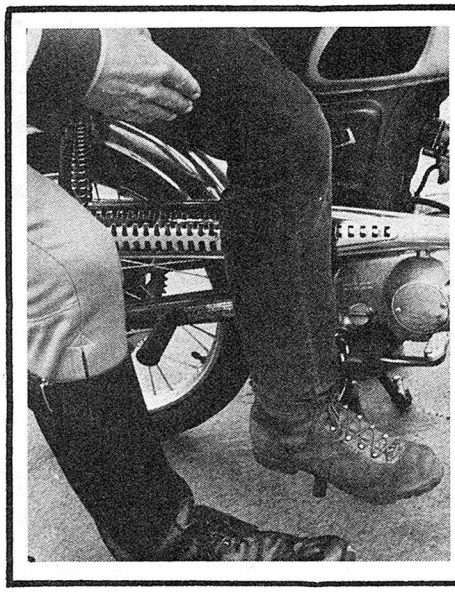
Learn to start your machine before you learn to ride it. Follow a set pattern every time from the "fuel on," to "ignition on," to "neutral," to actually kicking the machine into life.

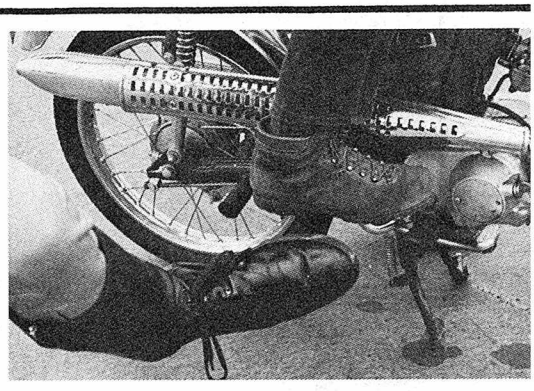
Officer Garrene explains to a first-time rider why he must have his heel in full contact with the rubber on the kickstarter lever so the lever can't slip out from beneath his sole to fly up into his calf.

shift with a two-stage operation of the lever. Pull the lever up (assuming you're changing up through the gears, of course) with your toe then let off on the pressure before trying to shift into the next gear. If you're changing down, press down with your toe and then let up on the pressure before shifting into the next gear. The *only* way to hold that gear-shifting foot while riding is so that your toe is a good half-inch away from the lever so you have to consciously move your foot at the ankle to effect any change in gear. If you develop a habit of riding with either the top or the bottom of your toe touching the gear lever you're going to have trouble shifting when you really want to and, worse, the machine is likely to pop into another gear or into neutral when you aren't expecting it! Notice the action of the brake pedal. There is usually a fraction of an inch of pedal movement (when it's adjusted properly) before the actuating lever on the brake itself begins to move. Be sure the lever is adjusted so that your foot doesn't have any chance to apply the rear brake as you move from the front to the rear of the seat. You should be able to apply a full rear brake without lifting your foot from the footpeg. Fiddle with the pedal and brake adjustments until it's just right.

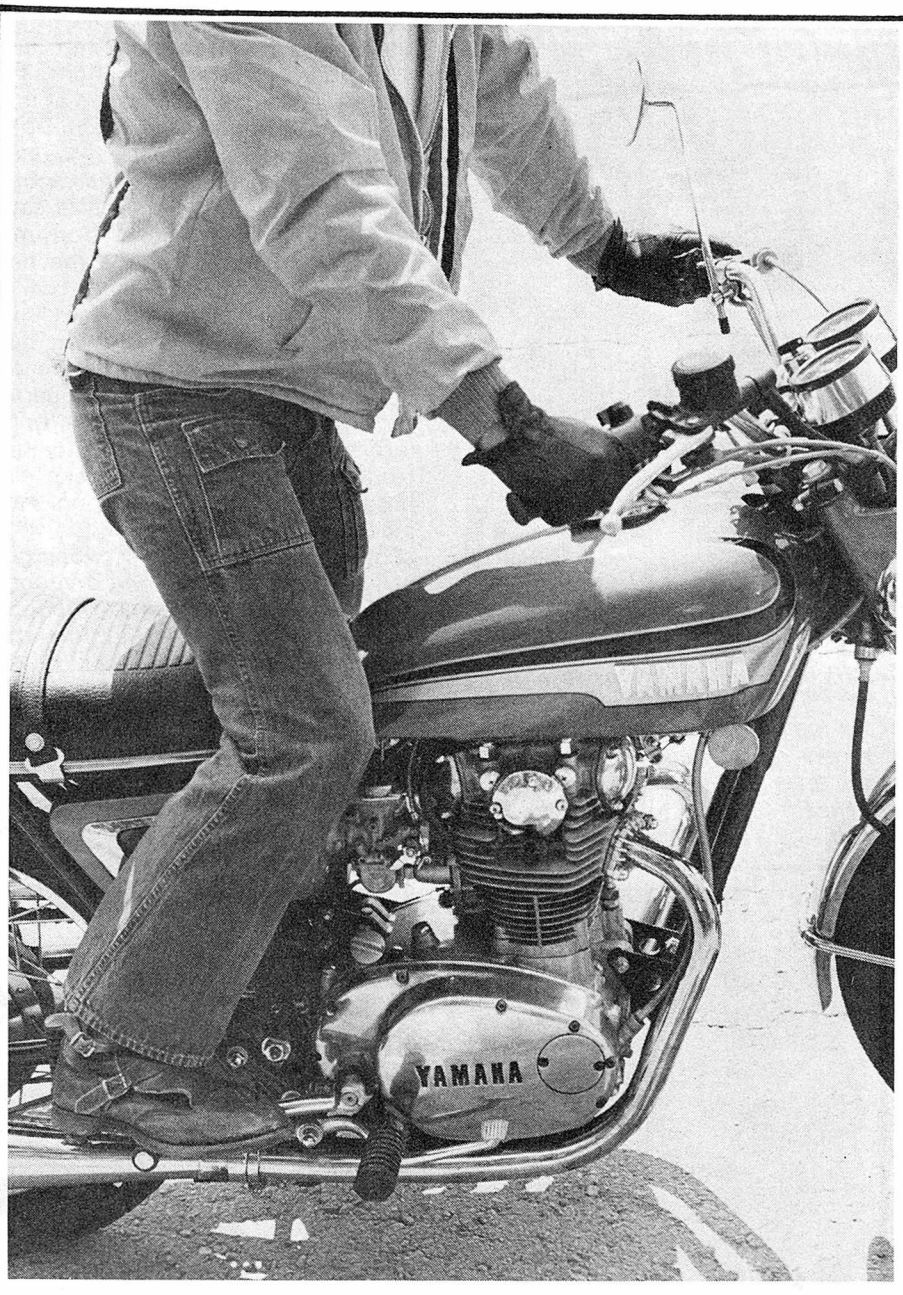
The handlebars can be adjusted by loosening their clamp bolts and rocking the bar ends forward and up OR rearward and down to obtain a comfortable riding position for your stature. Most riders prefer to adjust the handlebars so they're most comfortable with the rider about one-third of the way back in the seat. For maximum control, the handgrips should be roughly parallel with the ground when viewed from directly ahead. You may want to vary this position slightly or even change the handle bars but it's a good starting point. Be sure to tighten each clamp bolt only a half-turn at a time, when you re-tighten the bars, then move to the next bolt and the next with that half-turn until all of them are absolutely tight. The control levers can be loosened at their mounts and rotated around the bars until they are in the easiest-to-reach position—just be sure to super-tighten the clamp screws when you're satisfied with their positions. You may eventually want to change the handlebars for a different style, but try some like you *think* you want on a machine like yours before you buy. You MUST be able to operate the throttle at least for the first quarter-turn *and* hold onto the front brake lever at the same time, so try that before you settle on a front brake lever position. The front brakes on most machines are powerful enough to be operated with just the first two fingers of your right hand but we'd suggest you use all four and learn to work the throttle with a wrist action that doesn't effect the operation of the front brake.

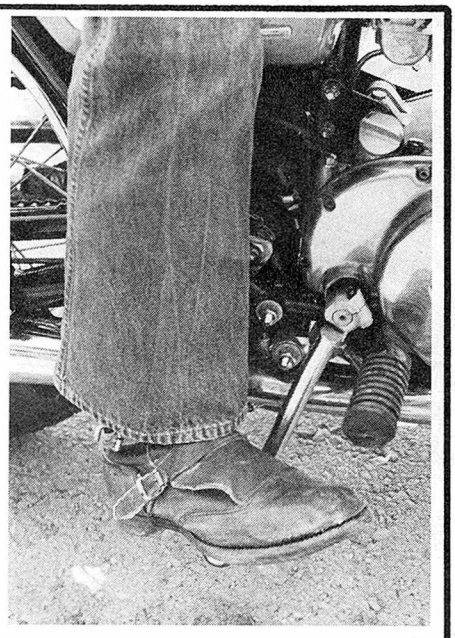
The garage (with an open door, of course) or driveway is the best place to learn to start and stop the *engine* too. Develop a starting drill in your mind that you follow *every* time. For most machines the sequence begins by turning on the gas. Again, there's no standard fuel petcock so you'll have to learn *yours*. Most have three positions: on, off and reserve. Some machines have a petcock on both sides of the tank and we'd suggest turning both on every time you ride to be sure the fuel is fresh on both sides of the tank when you fill up. Learn the feel of it so you can get it into the on—never the reserve—position every time. Shift the gearbox into neutral and be *sure* it's in neutral by rocking it back and forth (if it's

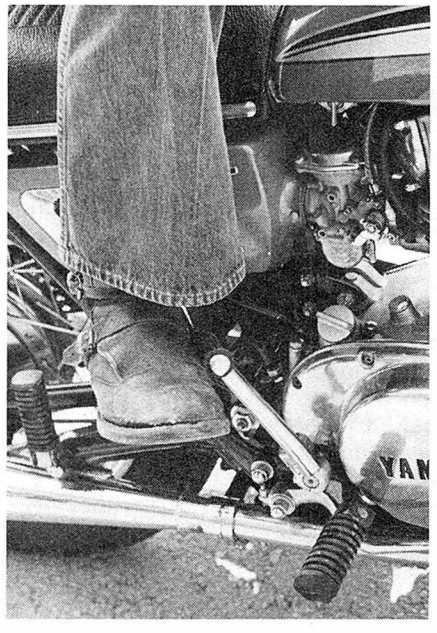




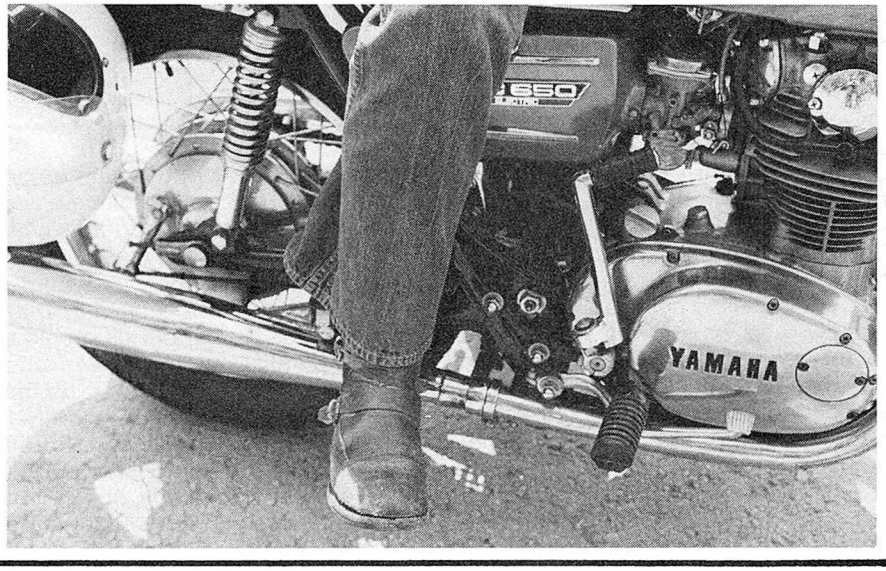
Your foot has to be parallel with the motorcycle if the kickstarter lever is contacting your boot heel properly. Bruised ankles while kick-starting are just one reason why smart riders ride with boots.

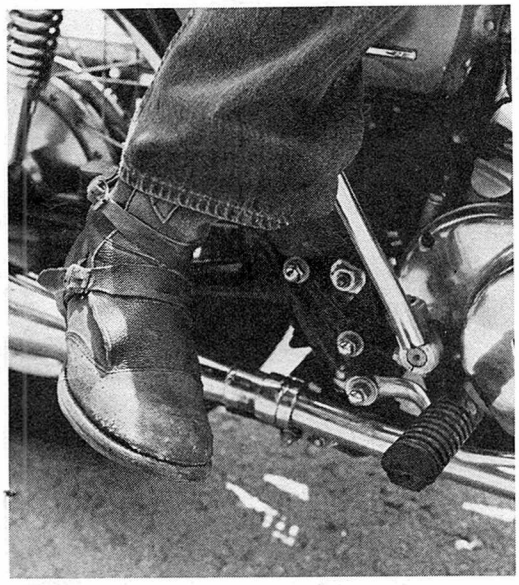






Turn the throttle on and concentrate as much of your weight as is needed to swing the kickstarter lever all the way to the bottom of its travel. Gently lift your foot to let the lever back up and use the side of your boot to fold the lever in—fold it every *time. If you can't locate a learn-to-ride school, you'll have to be your own critic. This rider forgot to hold the front brake lever on while starting. If you used the choke, be sure to turn it off when the engine warms.*



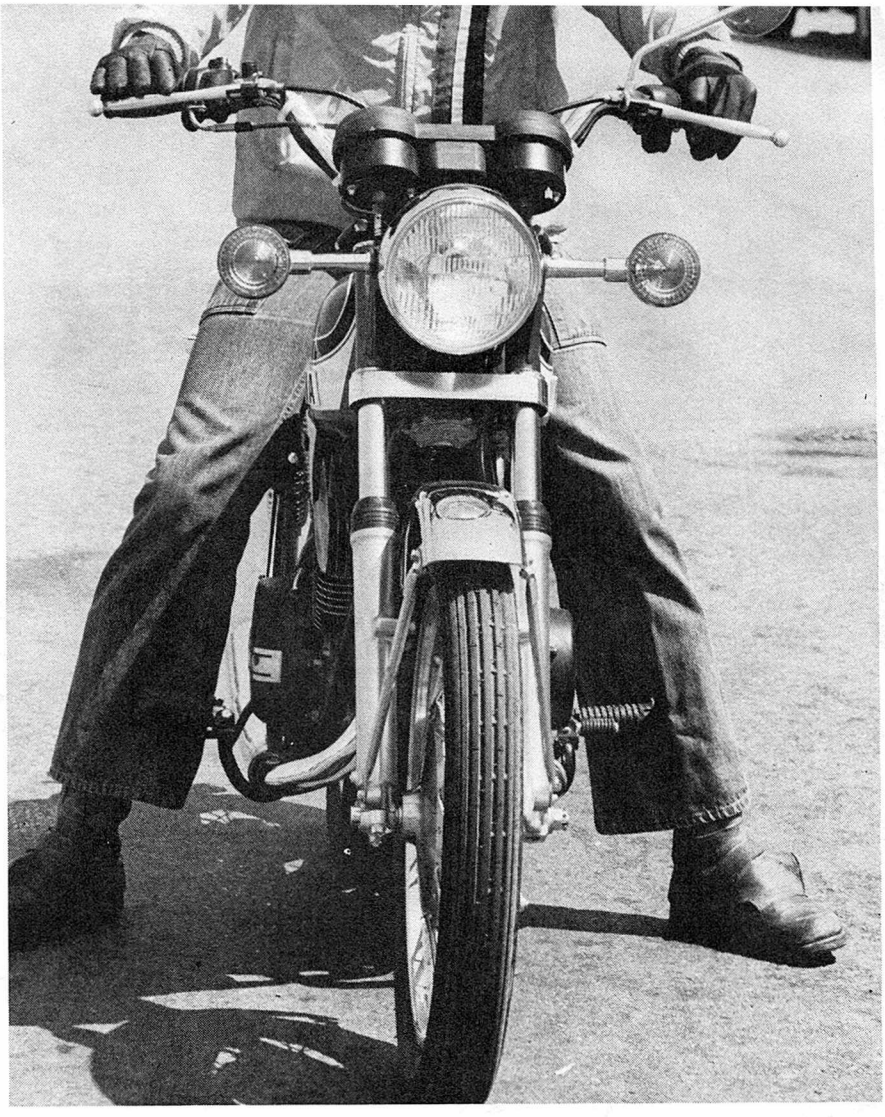


Bell bottoms or flares are the current rage but they're taboo on a two-wheeler. Catching the kick starter lever is just one reason; they can actually flutter into the rear spokes or chain as well!

off the center stand) or by trying to turn the engine over with the rear wheel. The rear wheel has enough leverage and gear reduction to actually turn the engine over but you'll soon be able to feel the difference between that and the free-wheeling effect of neutral.

Many modern road machines are fitted with a light to indicate neutral so you may want to form the habit of turning on the ignition *before* selecting neutral—the only problem is that the indicator light may someday light up when the gearbox is really in first gear or the light bulb may go—better to be able to find neutral by feel. Learn to use the kick starter even if the engine is fitted with a push-button electric starter. Be sure the starter lever is folded completely out and that its handle is set firmly into the arch of your boot right against the heel. When it reaches the bottom of its travel leave your foot right there for a moment then gently lift your foot up to let the lever move back up with it and fold-in the lever with the inside of your heel.

While all this folding and kicking is going on you'll have to use your right hand to regulate the throttle so the engine will start ticking over. Usually just a quarter-turn of the throttle—no more and, definitely, not all off—is enough. Keep the front brake full on while you work the throttle for starting. You should only have to prime the carburetor (by pressing down on the button on top



Now, you're ready to roll the machine off the centerstand and get some real riding experience. Don't forget your gloves or crash helmet in your excitement—you can spill as easily in a parking lot as in the street.

of the float chamber—the area where the fuel lines attach to the carburetor) when the engine is cold. Most well-tuned engines will start in summer weather with little or no choke but some machines require *both* priming and choking every time they're started. Your dealer or the machine's previous owner can give you the proper drill for any priming or choke application.

You can even practice gear changing and front/rear brake coordination to some extent while the machine is resting in the garage—just don't try it with the engine idling. In a panic stop or accident-avoidance situation you need to be able to use the throttle, the clutch, the front brake, the gear shift lever and the rear brake pedal ALL at the same time and each with full control. The movements have to be so much a part of you that you don't even think about them—you'll need to devote your full attention to the road, the area around you and to the general feeling of the machine. You'll soon discover that you have enough strength to grip the handlebars with just your thumb and the palm of your hand while your fingers modulate the front brake action and release and engage the clutch. You can't very well get the feeling of brake application just sitting there but you can get used to coordinating all the movements so that no one of them effects the other accidentally. Learn to operate the turn indicators and the headlight dimmer switch too.

A motorcycle is more like a fine musical instrument than a machine, at least from the standpoint of the amount of effort and coordination required at the controls. Like any instrument, you'd best practice on the one you're going to play. Learning on one machine and trying to ride equally as well on another, even the same year and model, is a poor second to learning about the machine you'll actually be riding. Once you've mastered those controls, though, you're ready for your first ride!

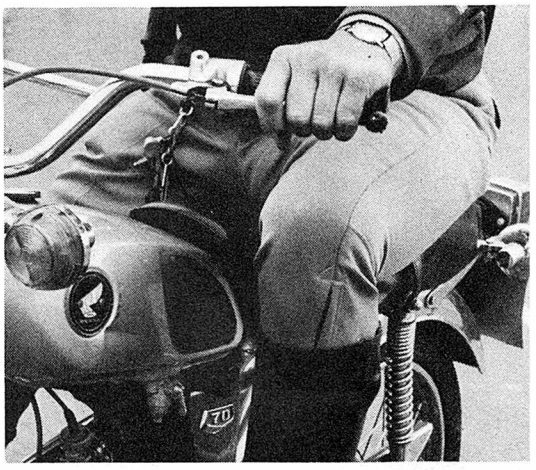
PARKING LOT GRAND PRIX

The best place to learn the pavement is where there's lots of it.

For all the words and all the center stand practice, there's only one way you'll ever learn to ride a motorcycle and that's by riding. For the first miles, however, you'd be wise to pick some pavement where you won't have to concentrate on other traffic, on the road surface, or contend with other distractions to the business-at-hand: learning to ride a motorcycle. You can't begin to learn to lean the machine into corners or to discipline your body to lean with it until you can use the controls that'll get you rolling and back to a stop again. You'll have to devote your total attention to riding if you expect to survive on the streets and highways so the operation of the controls has to become as natural as walking and that's a whole lot easier to say than it is to do! You need both feet and both hands to operate most motorcycles. Automatic transmissions are strictly for mini-bikes, Cadillacs and the future; for now, your hands must both work in unison with both of your feet to start and stop a motorcycle. There are a few hurdles or traumas to get through if you've never ridden a motorcycle. First, the knack of getting the thing rolling without toppling over, then that first wobbling stop, that first gear shift, that first corner, that first brake application, that first downshift, that first coordinated brake and downshift, coordinating front and rear brakes, coordinating front and rear brakes *and* downshifting and, finally, learning what motorcycling is all about by leaning through a corner for the first time.

We'll assume you learned how to get your engine started on the first kick every time and that the beast is now just sitting between your legs waiting to be unleashed. Check again, *every* time you restart the engine, to

Your local dealer should be able to tell you where one of the Yamaha "Learn-to-Ride" programs or Honda riding schools will be held. Some of the larger cities, like Long Beach, California, have schools too.



Use your full hand for both the clutch and brake levers. For your first few stops, from first gear runs, simply pull in the clutch and apply gentle pressure on the handbrake alone—rear braking comes later.

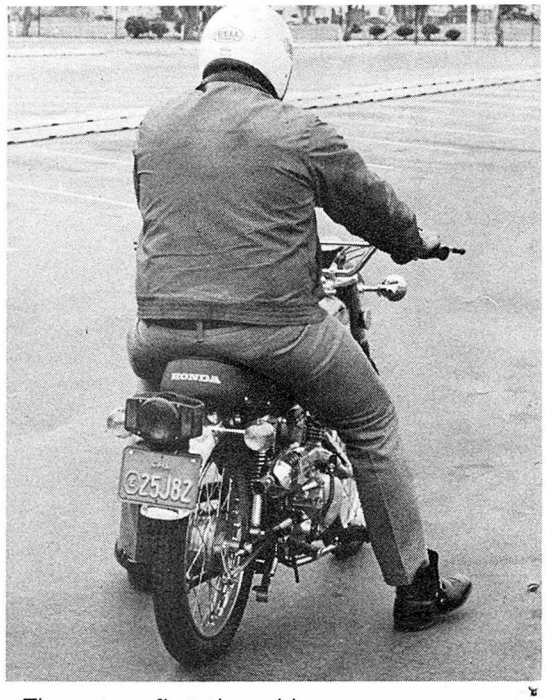
You have to start and stop the machine with your feet on the ground, so learn to point them straight ahead with the soles flat. The front brake should be on even with the machine idling in neutral for safety.

Lift (or press, depending on your gearbox) the gear lever from neutral into first and gently ease out the clutch with about a quarter-turn of throttle. Let off on the front brake and you're rolling.

Officer Bob Garrene of the Long Beach Police Department was one of the first to advocate and put into practice a parking lot training school (with classroom instruction as well) to train first-time riders.

be sure the kickstarter is folded back and that *both* the center stand and the kickstand are folded *all* the way up against their stops. You'll have to slide your feet along the ground for the first few feet to stabilize the machine and, again, when it comes to a stop, so let's get that part right first. This foot-slidin' bit is another reason why you should wear boots, by the way. Get in the all-the-time habit of keeping your feet angled perfectly parallel with the ground and, for most of us, exert the effort to see that your toes are pointed straight ahead. If your toes angle outward the forward motion of the machine will drag them further and further away from the motorcycle as you slide to a stop.

Now, slowly, oh-so-slowly, let out the clutch with the throttle about a quarter-turn open—nothing happens—you forgot to put it into gear. Okay, try again, but first push (or pull if first is above neutral on your machine) the



These two first-time riders are coming in for their first ''landing'' from that monumental first solo ride. Get in the habit of putting both feet on the ground, using the handbrake alone for the final few feet of the stop.

lever down into first with the clutch *all* the way in. You should feel a slight clunk as the gears engage inside the gearbox. Now, oh-so-slowly let out the clutch again with the throttle a quarter-turn open and the machine should start to roll. Keep your feet on the ground for the first run and don't open the throttle; just pull the clutch back in, pull the front brake gently and roll to a stop with both feet flat on the ground and both handlebar levers tight against the grips. Try it a few more times if you like; clutch gently out, steady throttle, clutch all the way out for a few feet, clutch gently back in with a gentle application of front brake. If you run out of parking lot, flick it into neutral, walk it around to point in the opposite direction and start over. After you feel confident about starting and stopping, try lifting both feet up onto the pegs in the middle of each run for twenty feet or so.

Once you've mastered the feet-up and feet-down trick try working the throttle gently open to no more than half to get the feel of it. For your next act, try a simple steer-by-the-bars corner: first with both feet down and, as you get used to it, with both feet up but at NO more than a walking pace. Finally, try the feet-up, steer-by-the-bars, feet-down to a stop sequence but run the machine at one-quarter to as much as three-quarters throttle between the turns and try a sequence of left and right hand turns. Keep these first few turns down to simple 90-degree right and left handers and practice a few 180-degree turns after you have a bit better feel of the machine.

George LaPay, also from the Long Beach Police Department, directs a pair of new riders to proceed after a ''boulevard'' stop. The parking lot classes teach the bare basics of the machine's controls and safety.

Learning to ride is almost like learning to walk in that those first few steps can be critical. Skidding along with your heels down and toes up, even at a walking pace, takes practice. It's a good 'balance' tool.

Each motorcycle, even the same brand and model, has a different feel at the shift pedal. Adjust the pedal, on your own machine, so you don't have to lift your foot to shift; just pivot your toe up or down.

Okay? Shifting is next. You've already tried it without the engine running, now all you have to do is repeat a snap-quick throttle off, clutch in, lift up (or down) on the foot lever until you hear or feel it click into gear, gentle clutch out, throttle gently back on and you should be on your way.

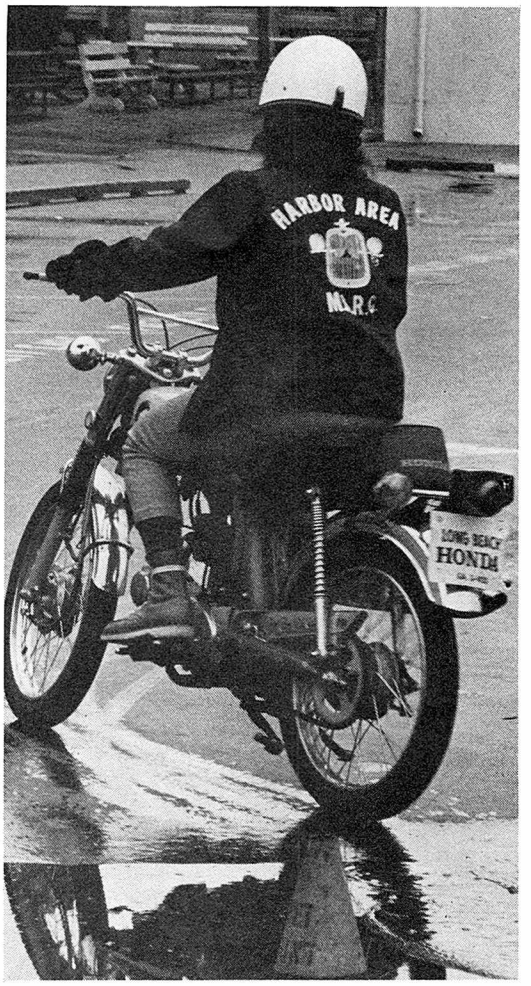
Roll a few feet in second gear then ease off the throttle, snap in the clutch, stick the foot lever back into first, ease the front brake back on and roll to a stop with both feet on the ground. Repeat it again and again until you can shift upward smoothly but don't get it any higher than second gear for now.

When you've rested and tried the starting, shift to second and stopping bit again try easing on just a bit of rear brake alone, with the throttle off and the clutch in to get the feel of it. When you slow to something near wobble speed let the clutch out slowly and accelerate away to try it again with the rear brake. It'll take a good hundred hours of practice before you can really tell what's going on with the brakes so you can judge the point where the brake begins to lock the wheel to skid the tire—that's where nearly every motorcycle accident reaches the point of no return.

Most of your stopping should be done with pressure on the front brake coordinated with just slightly less pressure on the rear. The rear brake is the tricky one because the application of the front will actually lighten the load on the rear tire as your weight and the machine's shift forward onto the compressing fork springs. Learn to feel when the rear brake is locking up in the dirt—but that's something we'll get to later—for now, just get the feel of using a bit of rear brake while you generate most of the stopping force with the front.

The very best panic stops by the professional road racers and riders are made that way anyway because at

The formal training courses usually provide rubber cones to mark a prescribed riding course. Paper plates (wet them if it's windy) will do for the private rider learning on his own. Learn the feel of water early.



Usually, the actual water puddle isn't as slick as the tracked-out water on the far side. A dab of front brake, even at five miles an hour, could easilyt let the front wheel slide out from beneath you here.

higher speeds the front tire has most of the stopping traction. Get used to the idea of letting off on the rear brake just before the machine is going so slowly you *have* to put your foot down and to completing the stop with just the front brake. Yes, there are riders who stop with just their shift foot on the ground but it's a bad habit to get into because one day you'll have to put the other foot down to balance the machine; so get in the habit from the start.

Keep your straight-ahead speeds in any parking lot down to 20 miles an hour or less. Most machines will do that in first gear, so the shifting to second is mostly for practice. Your owner's manual and other riders can give you an idea of how fast to go in each gear before shifting up into the next higher gear. If you find you are approaching your 90-degree corners at more than five miles an hour, then it's wise to shift down into first gear and, in any case, it's good practice. Remember, snap the clutch *in quickly* and *gently* ease it *out!* Quick-in, gentle-out, for clutch action.

When you pull in the clutch to downshift from second to first, gently let it out *after* you have applied a bit of front and rear brake to bring your speed down some. The machine will probably want to throw you over the bars as you let the clutch out for first gear, so be prepared to ease on a bit more throttle.

We're sorry for all the ''bits'' and ''somes,'' but the only way to find out exactly how much throttle or speed is needed for downshifting is a thing you'll have to learn by doing. Make as many practice down-shifts and first gear right-corners as you need to feel comfortable with the maneuver. As the day (or days) of riding progresses you'll find that you're riding through the corners with more and more first-gear throttle and speed. If, at the end of the day, you stop and think about it you'll also realize that you've been leaning the machine more and more toward the inside of the corner as your speed increases. That's one of the lessons of motorcycling that comes naturally—getting to feel really comfortable with a leaning machine, though, will take some time.

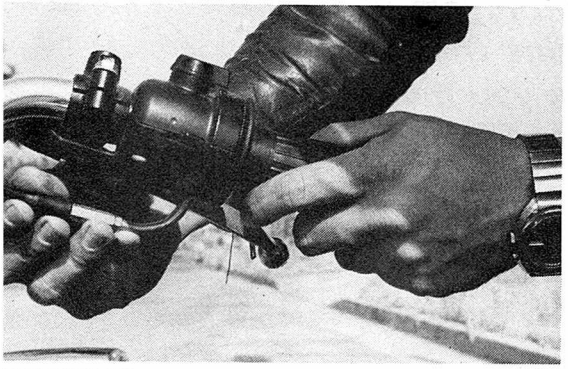
Now that you know how to work all the controls and you have a bit of the feeling of leaning through the turns, you may feel you know how to ride. You don't. True, you can study the state's motor vehicle code and pass the motorcycle riding tests in most states (that even have such a test) with just what you know so far, but you are definitely NOT in control just because you've learned how to use the controls. When you know enough about motorcycle riding to be in control, *then* you'll know how to ride and we'll tell you more about just that later. . . .

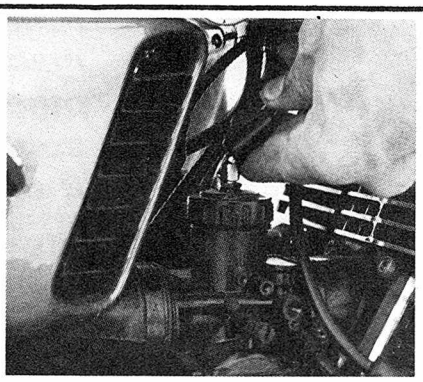
PRE-FLIGHT FOR TWO-WHEELERS

A motorcycle is a machine that, like no other, you must befriend if you expect it to serve you.

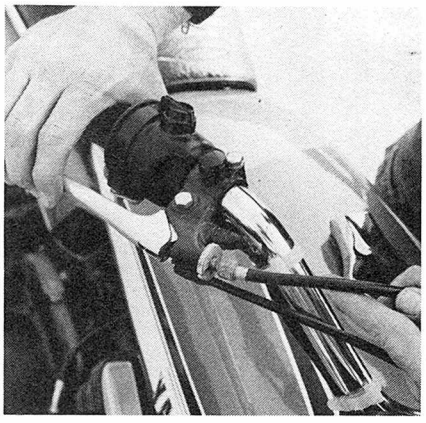
No experienced aircraft pilot would think of taking any flight without going over his machinery and his safety gear before *every* flight. In fact, he'd never have passed his license exam in the first place if he hadn't performed a complete inspection of the aircraft before he taxied down the runway apron. There isn't one motorcyclist in a thousand that would even think of taking such pains with his machine. Oh, metal polish and wax and shine are certainly a part of many proud owners every-ride drill but few give much thought to the actual working parts of their shining beasts. Those that do give their machines a thorough going-over every riding day are those unfortunate few who've had an axle nut disappear at seventy or a spoke catch in a corner or a brake rod literally pole-vault the machine and the rider over the handlebars. The damn thing *is* made of metal, the parts *do* work and wear, and they *will* wear and loosen just as surely as a spark plug will spark.

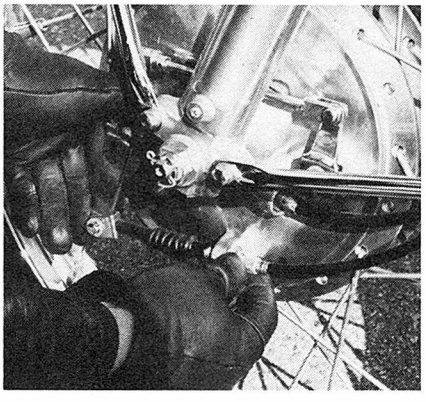
There is really no mystery as to which parts to inspect on your machine *if* you spend just a moment to think about it logically; *every* part that moves or vibrates will wear and loosen and that, freedom lover, means every part on the machine. Now, no one is going to go over every bolt and screw every time he rides the machine. Every last one *should* be checked at least once a month. The parts to check before any ride of a reasonably long distance are those that are either the most likely to wear (all the control connections) and those like axle nuts and brake anchors and spokes that can spell a sure accident if they do let go. It's always been a mystery to me why a road racer's mechanic can spend weeks doing just that for a hundred-mile ride and a cross-country touring rider/owner worries only about gas and, maybe, about tire pressures. An accident at fifty can kill you just as dead, just as quickly, as one at 150 and the road rider's odds are worse in that he's traveling many-times further than a road racer. If it helps your thought-



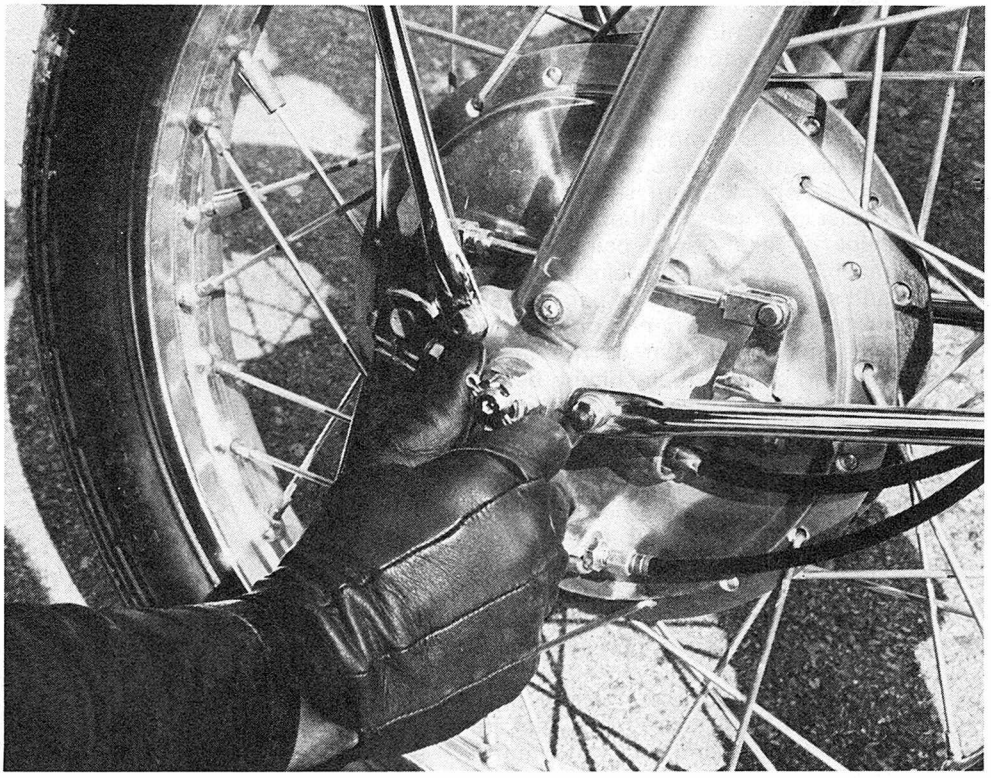


The working parts of your machine will *wear but you can prevent on-the-road breakdowns* if *you inspect them before you ride. Pull out the top and bottom ends of the throttle cable to check for broken inner strands.*





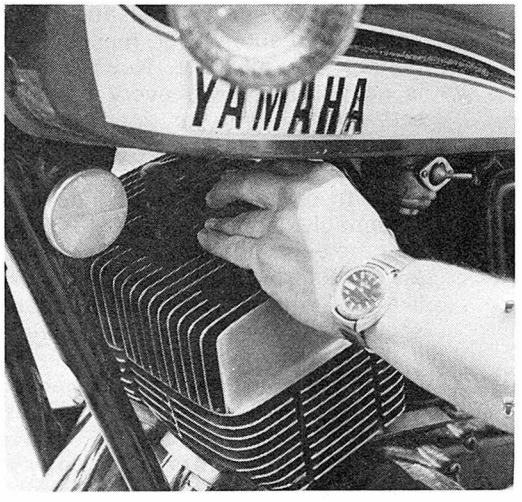
Most of your machine's stopping capability depends on the front brake so it better work smoothly. Check both inner cables ends and the cable sheath for breaks and frays. Be sure the lock nuts are tight too.



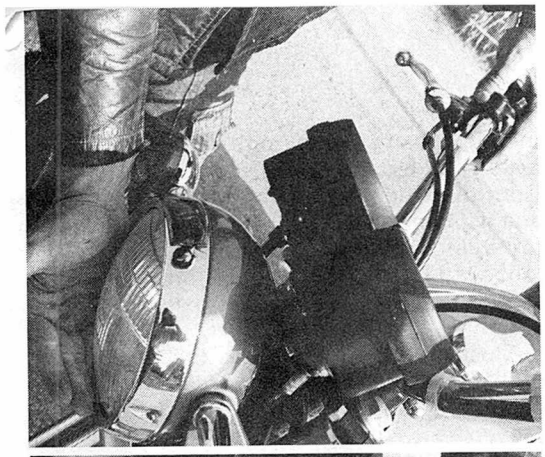
Axle nuts do work loose and it only takes a second to check them. Put the machine up on its center stand, next, and spin the front and rear wheels while you hold a wrench against the spokes to listen *for broken ones.*

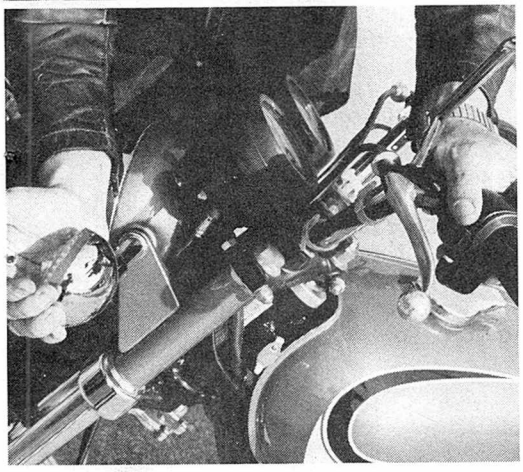
processes, think of any day's ride as the start of a road race at Daytona or Loudon or Laguna Seca —would you really take that oil-smeared and rattling beast around a race track for even an hour? If not, then how can you think of riding for three or six or more hours among unyielding automobiles and bridge abutments and elevated expressways?

Establish a simple drill or sequence of inspection on your machine and you can pre-flight it in less than five minutes. Pick whatever logical sequence you feel you'll remember. One of the best is to sit in the saddle and work the controls. Note where each of your hand and foot movements leads. The throttle twistgrip, for example, leads to the throttle cable and then to the carburetors. Be sure the rubber is on tight and not split—there's nothing more frightening than a handful of handgrip with no handlebar inside! Check the outer cable for any kinks or signs of wear that can cause the inner strands to chafe and snap. Pull the twistgrip and the carburetor ends free, in turn, to see that no individual cable strands are hanging out. If there's any sign of wear, spend a couple of bucks and replace it before



Be sure that the fuel lines are tight on their petcocks and at the carburetor. Check the spark plugs so they're tight in the head and watch for cracked or loose high tension wires or plug connectors.





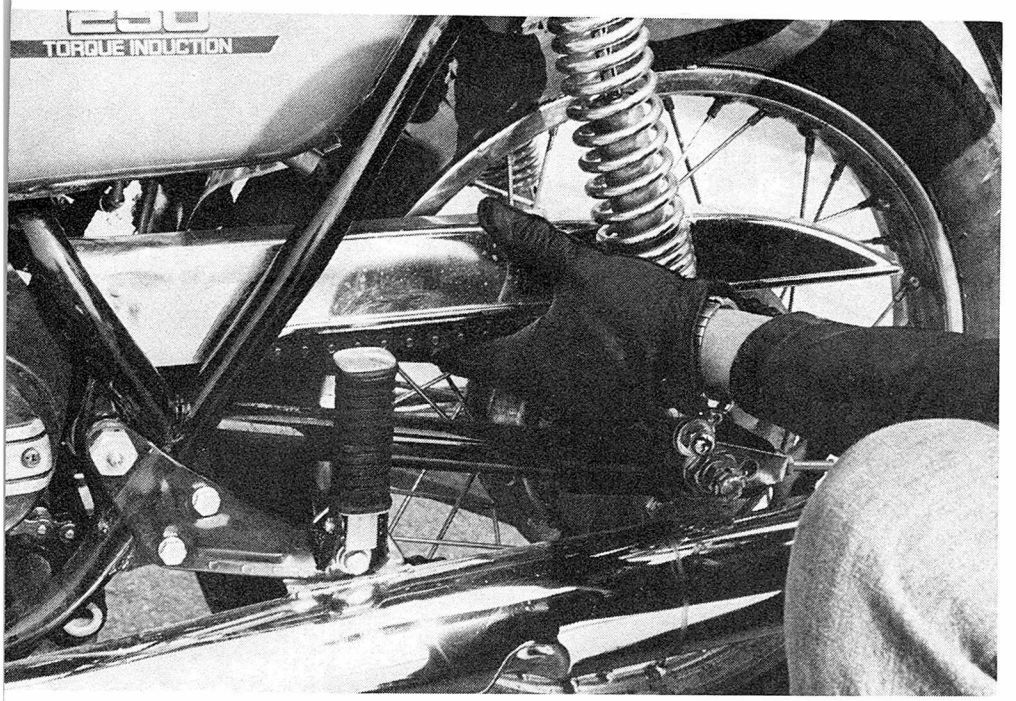
Try the headlight on both bright and dimmed beams. If it dulls too quickly, check the battery and charging circuit as well. Try both the front and rear turn indicators. Be sure to carry spare bulbs.

it breaks. Follow the clutch cable down to the clutch and inspect both of its working ends and the cable sheath in between and repeat the inspection on the front brake cable. Check the rear brake pedal for any cracks and its pivot mount and mount at the rear brake for signs of wear or missing cotter pins or nuts. Be certain that the footpeg and pedal rubbers are tight and not cracked and, believe-it-or-not, the footpeg mounting bolts themselves.

Look over the lighting and other electrical safety equipment. Check the headlight for both bright and dim operation, the tail light and both the front and rear-actuated stop lights. Does the stoplight work with *either* the front brake *or* the rear brake. See that the turn indicators function at both the front and rear of the machine and try out the horn. If the machine is fitted with a handlebar-mounted kill switch be sure it works and there are no short circuits to the handlebars. Look at the spark plug lead wire to see that it isn't cracking and be sure that it is attached firmly to the spark plug. Check the spark plug, too, to be sure that it's tight in the head.

The taillight is one of your most effective riding weapons; in conjunction with the headlight night or *day and as a stop light—be sure that it is functioning in both capacities for every ride.*

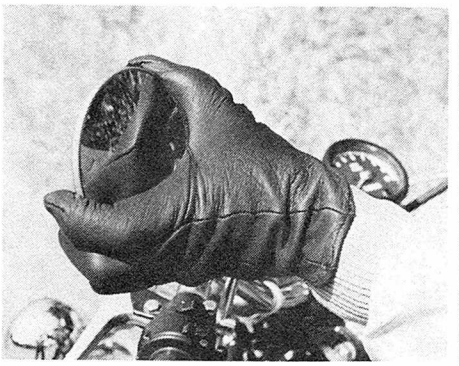
The actual mechanical check can be a quick one, starting at the front tire. Is the tire pressure what your owner's manual recommends? Is the valve stem loose or bent backward waiting to snap-off and leak? Are there any signs of metal or missing chunks of rubber in the tire tread? Spin the wheel and hold a wrench lightly against the spokes. If they all ring they're probably fine but any that give off a dull clunk are either too loose or already broken and ready to catch in the forks to lock up the front wheel on the freeway. If the machine has a center stand put the bike up on it and shove the weight to the rear so you can spin the front wheel to see

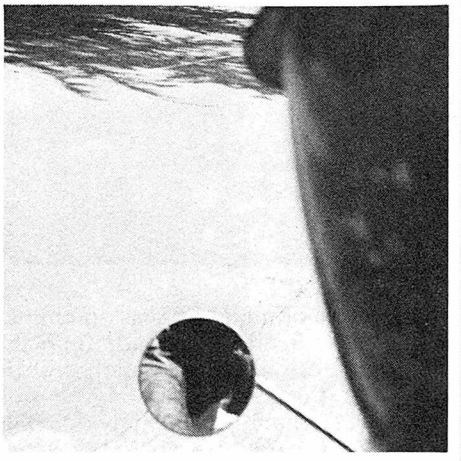


Check the chain for proper tension midway between the sprockets with the rear wheel off the ground. The bolt the rear swinging arm pivots on is almost as important a

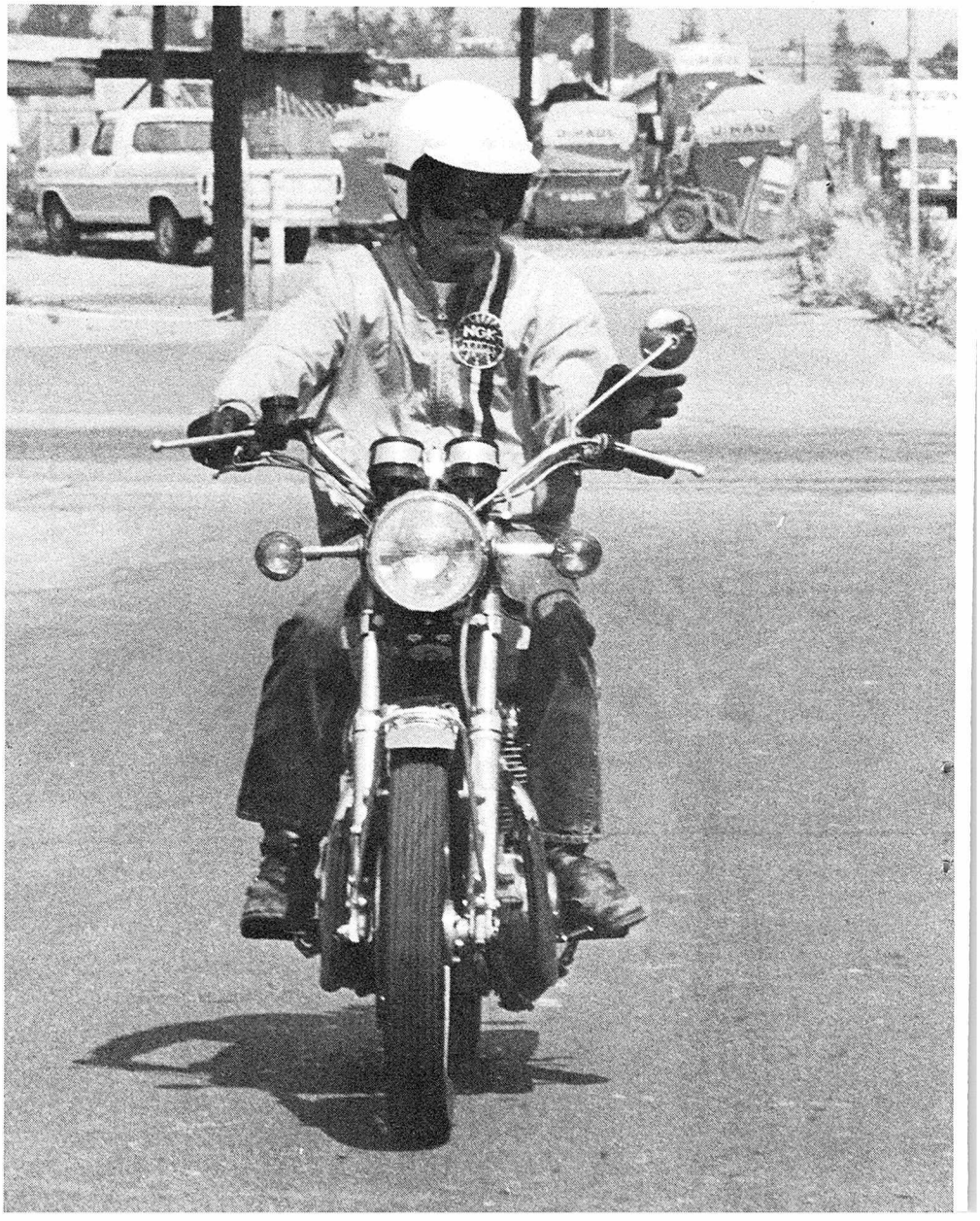
that it doesn't drag from badly adjusted brakes or bearings about to fail. Grab the wheel firmly and push it up against the steering crown to check for wear in the steering bearings or loose adjusting nuts there on the steering crown. See that the axle nut is tight.

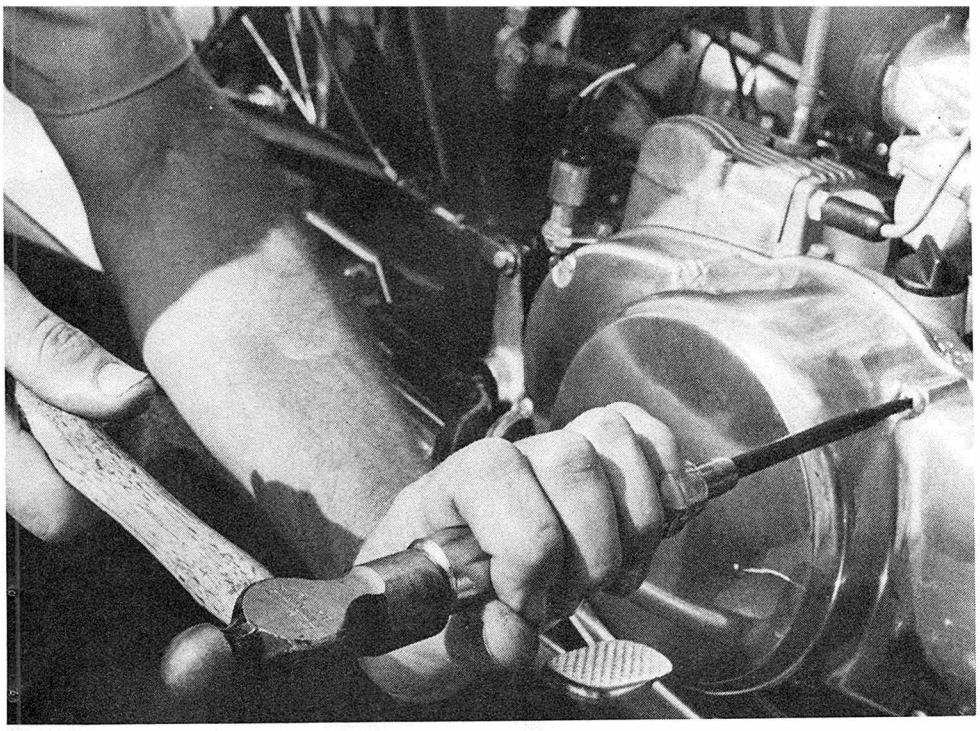
Most of your attention to the rear of the machine can be focused on the chain, brake and rear wheel assembly. Move the chain up and down in the middle of its run to see that it doesn't move more than a half-inch or so. Try plucking the chain off the sprocket; if it'll pull away any more than a half-link then the chain is shot and ready to go. Check the rear axle nuts to be sure they're tight and that any lock washers or cotter pins are still intact. Spin the rear wheel, to watch for signs of wobble, to look for nails in the tire or chips from the tread, and to try a light tap on each spoke so you'll *know* that they're all there





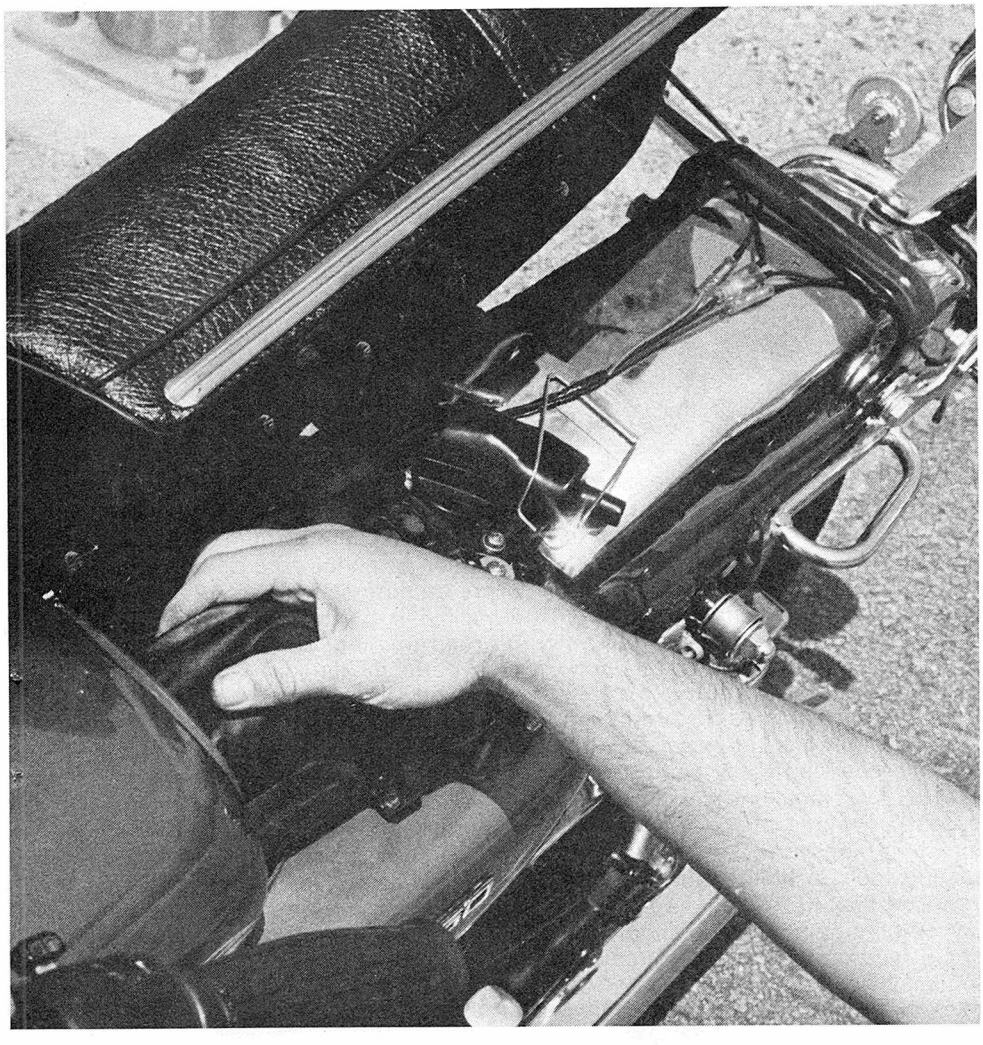
The rear view mirror is the best friend you have on the road. Adjust it so you can see without turning your head and, better, fit one on each handlebar. Their locking nuts must be tight too.





You can't loosen those cross-headed ''Phillips-head'' screws to reach for a broken chain or to dry a wet ignition without a hammer-driven impact wrench—they're just too tight—so carry an impact with you.

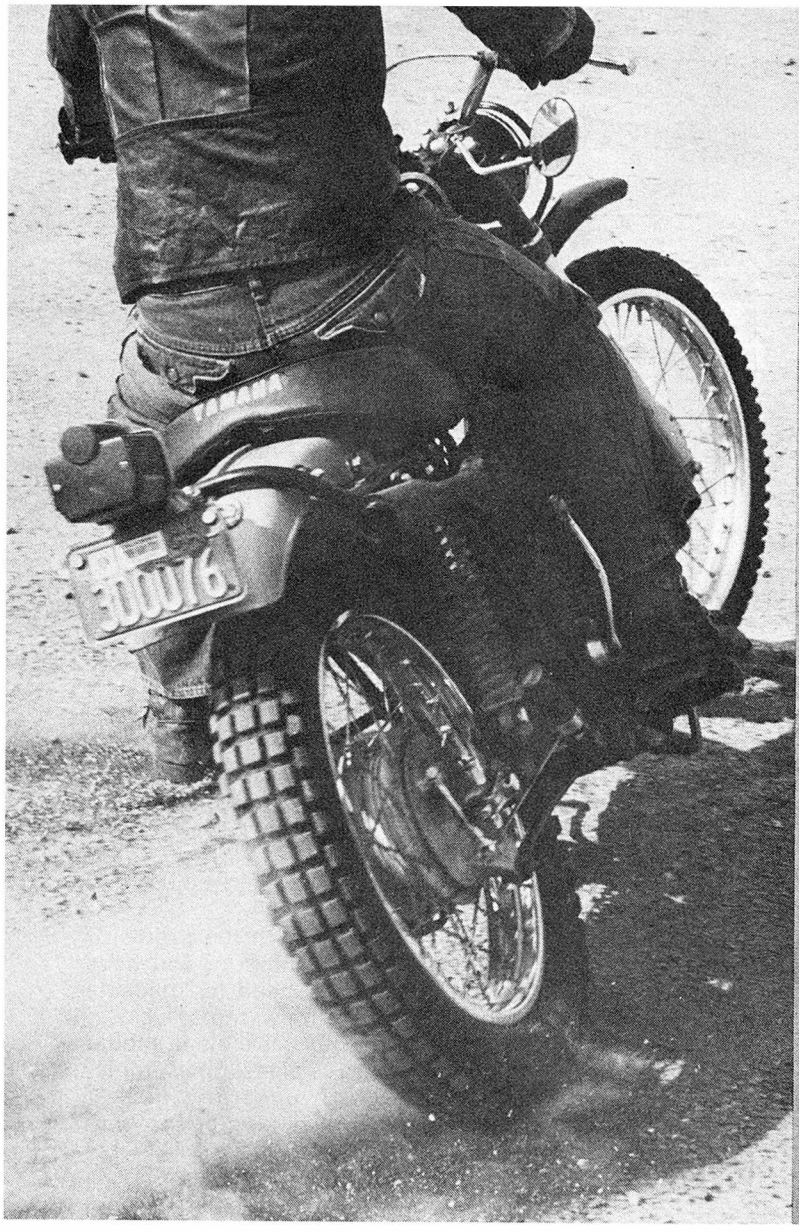
Many motorcycles are fitted with a knob on the handlebars that serves to ''dampen'' the steering by applying friction at the steering crown. Try it in different positions for different types of roads and *loads.*



That cavity beneath the seat or in your toolbox should be filled with more than just the basic factory tools. Self-locking pliers, and impact screwdriver, duct tape, baling wire and pliers belong there.

and be able to spot and adjust any loose spokes.

Take a look beneath the saddle or in the tool box to be sure you have all the tools you'll need for roadside repairs. Not one new motorcycle in a hundred has *all* the tools it should have. Do you have pliers, for example, and spare chain links and master links? A spare spark plug or two *with* a wrench that you *know* will work? Do you have the wrenches it takes to remove the front or rear wheels and to adjust or replace the chain? Do you have a hammer-driven impact screwdriver to loosen those Phillips-headed screws that hide the contact breaker points or ignition system? You can't get at them with a plain screwdriver because the factory and your dealer hammer-drive them tight. Are there spare fuses and light bulbs wrapped in foam rubber so vibration won't break the filament before you can use them? Is there a wrench that'll fit the wheel spokes? How about a roll of silver-colored air conditioner duct tape and some steel baling wire to replace the endless list of attaching hardware that can vibrate off? A clean rag? How about a pair of self-locking pliers to clamp loose parts in place or to use as an all-purpose wrench? If you *know* you've got the make-it-back, rather than trailer-it-back, bits beneath the seat you can truly rest in peace as you cruise the countryside by night or day. If nothing else, you'll become more familiar with your machine just finding out what tools you really do need *before* you *have* to use them.

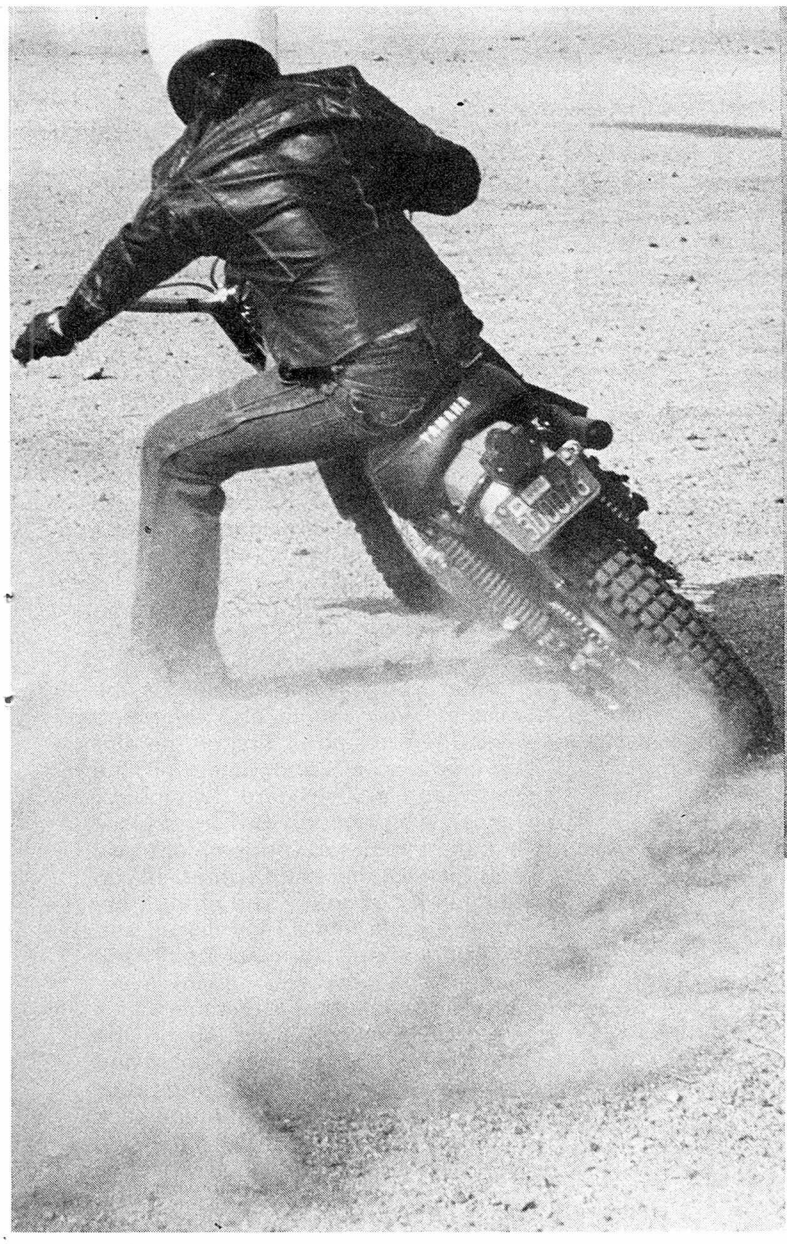


CONTROL & CONFIDENCE

Some tips from the experts on learning and loving that two-wheeled link with life.

We never really understood why the highway patrol, sheriffs department and police force motorcycle training schools seemed always to offer the trainees so many lessons in dirt riding. We've heard and read that the dirt bit was just a rest from the rigors of all-day sessions on the road or that it was only for those rare across-vacant lot and dirt road pursuits. There was some element of truth in both concepts but whoever wrote those stories missed the point of all that tulle work. Our conversations with the Los Angeles Police Department and with the California Highway Patrol indicated that the off-road area of instruction was really an integral part of their efforts to build confidence in their graduate motor officers through better machine control. There's a thin line, as you know all-too-well, between really being frightened by your machine and having a respect for what it can and cannot do. The dirt-doings are one of the best training tools to build respect and to eliminate fear. If it's required for the law enforcement crew it should be part of *your* road-riding training too. You may not need to ride 200,000 miles without an accident like these professionals must, but you can still stuff a lot of machine mishandling accidents in even twenty-miles so pay attention to some excerpts from ''officers training school.'' . . .

Pick a flat, smooth area for your off road training; something as close to a perfectly flat dirt road the size of a football field is best. The undersurface should be nearly rock hard with a covering of loose sand, dirt and gravel. If there are a few gentle hillsides in the area so much the better but most of your work and riding practice will be done on that simulated, but as rut-free as possible, imitation dirt byway. Your road-going machine will perform just about the same way on the graveled-covered earth as will on the paved highway *except* for the fact that the lack-of-

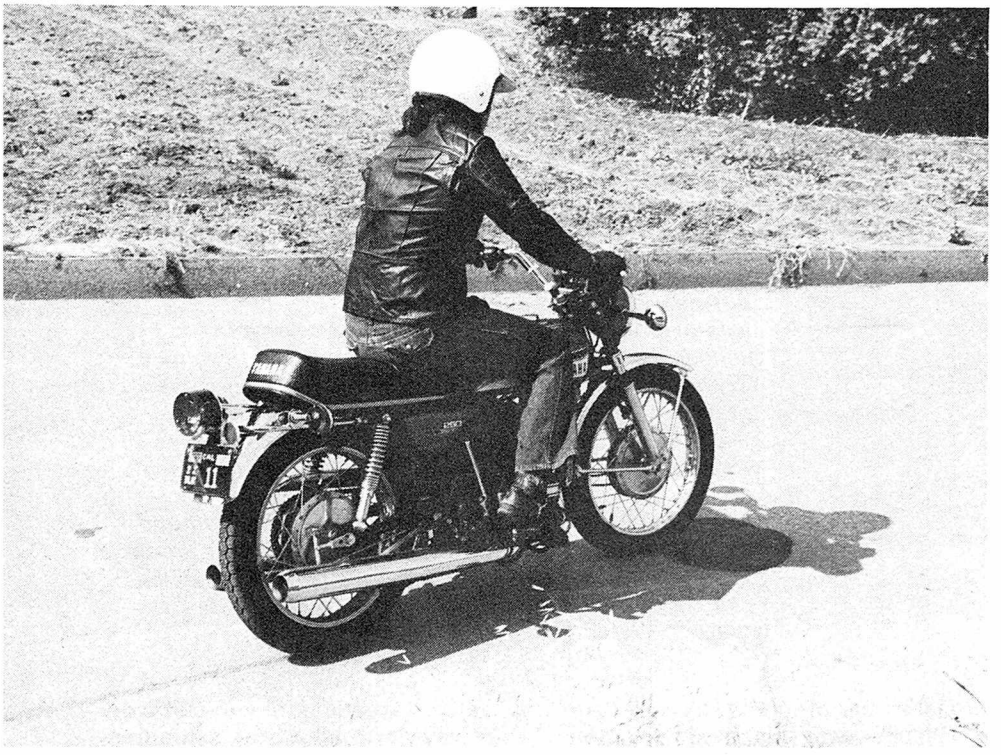


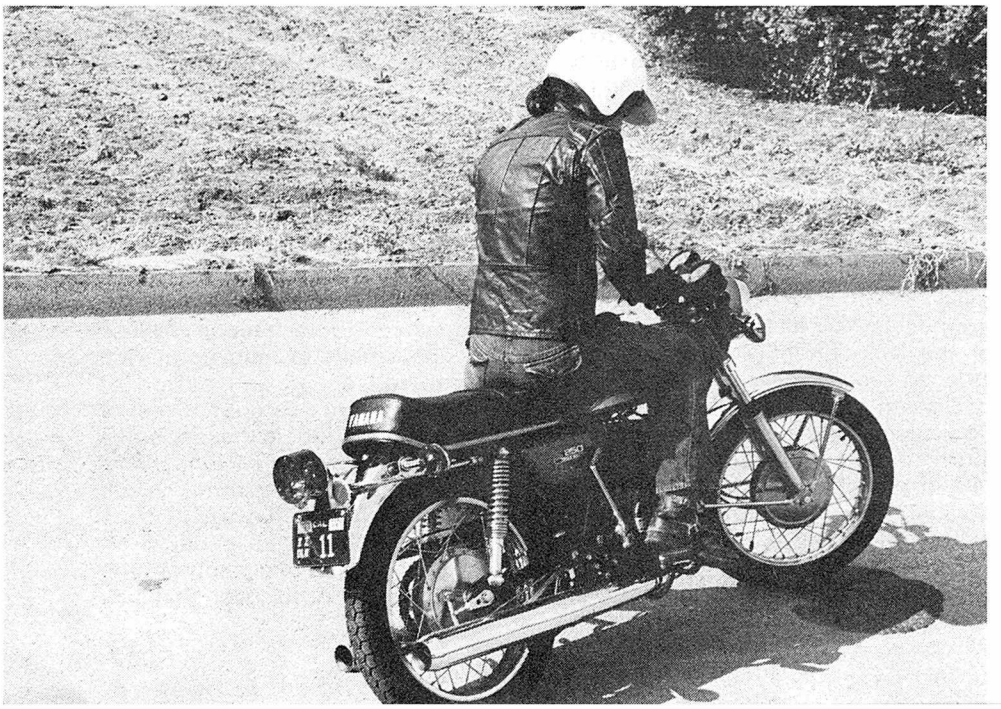
Carrying a locked-up rear brake to the ultimate! Some dirt-riding practice can give you the feel of loss-of-traction but at speeds only a relatively danger-free fraction of the same antics on pavement. Try locking-up the brake on your machine on loose gravel or sand-covered dirt so you can learn to feel the machine and how it *wants to perform. Be sure, this* one *time, to lean the bike away from the brake so you can keep one foot down and one on the brake pedal to support the bike through the skid and so that the machine won't fall on you to break an ankle. Try, too, letting up on the brake in the middle of the skid to get the feel of how the machine will try to correct itself.*

traction will make any control corrections seem like a speeded-up motion picture. Just the slightest amount of excess throttle will, for example, break the back tire loose. Similarly, too-severe use of the front brake lever or rear brake pedal will be translated into instant skids. In all, if you picked the right loose-gravel surface, your machine will react nearly the same way at ten-miles-an-hour as it would at fifty-plus on pavement. Now, you can find out what it might feel like when that rock-stable motorcycle suddenly starts to wiggle and twist about and you can do it with a minimum chance of injury to you or the machine. That's what dirt-riding with a road bike is all about.

We mentioned earlier that there's a world of difference in the basic way a dirt motorcycle is ridden as compared to a streetster. The rider generally tries to stay on top of the dirt motorcycle with his spine more-or-less vertical to the ground while the road rider leans *with* his mount. When you're in the dirt, do as the dirt riders do—you're there to feel how the machine reacts and acts when the tires lose their grip on the ground. While you're at it, you can get a general idea of what it'll feel like if and when you have to swerve off the road and onto the grassy and weedy and gravely verge or barrow pit at the edge of the highway. When and if the day comes that you have to take to the tulles to avoid an accident you'll know how it feels. You'll also learn a respect for the lack-of-traction that the dirt-surfaced secondary roads offer to the road-going motorcycle. Keep reminding yourself, however, that you're not churning up all that dust to learn to be a dirt racer but rather to learn the unusual ''twilight'' edges of total machine control that are the exception, not the rule, to road riding.

Practice riding about in the dirt and gravel and weeds until you can work your way up to about the same general miles-per-hour speed range you felt comfortable with on the parking lot. The same feet-down to stop rules apply as well, of course, as the coordination of the clutch and throttle for control at shift-time. Think smoooooth in the dirt as well as on the street. Practice stopping just at the bitter edge of wheel lockup during front-only, rear-only and front/rear coordinated braking. The instant wheelspin of the dirt will magnify your errors at speeds but a fraction of those on the pavement to help accelerate your control-acclimation period of learning. Once you've got the feel of the thing, try locking up the rear brake and leaving it on as shown in the photo sequence. This time, you'll have to lean the machine *away* from the side that the brake pedal is on so you can keep your foot on the pedal. You'll soon discover that you





have to steer in the direction the rear is going to keep any measure of control—another lesson that will serve you well the first time you start to lock up the brakes on a rain or oil-wetted street. Try locking up the brake until the machine skids for a few yards and then letting it off again to see how the machine tries to straighten itself out and how you have to correct with steering and body movements to keep from having the handlebars wrenched from your hands. You'll learn soon enough on your own but, a word of warning; keep that foot on the ground and away from the machine if it's sliding with a locked rear brake or the thing will fall on your leg! The dirt is NOT the place to practice leaning the bike over in a turn with both feet on the pegs!

After you have a feeling for the machine you should also try riding over a few obstacles; first on the dirt-covered ''road'' and, later, on the pavement. A 2x4 board, two-foot or longer, is big enough. Be sure to place it at right angles to your path of travel and aim for the exact center. If you ride too far off to the end of the ''obstacle'' you'll find it may flip up and fly into you and the machine. That's one reason why you should avoid anything as short as a common brick for your practice. Stand up on the pegs just before you hit the board and straighten your arms. Bend your knees a bit and push your fanny back as far as you can—all to lighten the load on the front forks and wheel as much as possible so it can climb up and over the board without pitching you out of the saddle. Keep standing until the rear wheel had rolled on over the object. Keep your speed down in the five-miles-an-hour range at first and gradually work your way up to 15 or 20-per as you gain confidence. Learn to discipline your mind toward making decisions about such obstacles, be they stray dogs or boards, that you encounter in the road.

If you *have* to hit something, hit it dead center and straight on and try to ride it out the same way you're doing with the board. The worst accidents happen when riders try too hard to swerve around some minor

No, we don't recommend that you practice on pavement but this sequence will give you an idea of how that dirt skidding applies to the street. Note the black skid mark by the rear tire and the way the rider 'automatically' (from previous dirt-riding practice) is steering into the skid to help the machine self-correct.

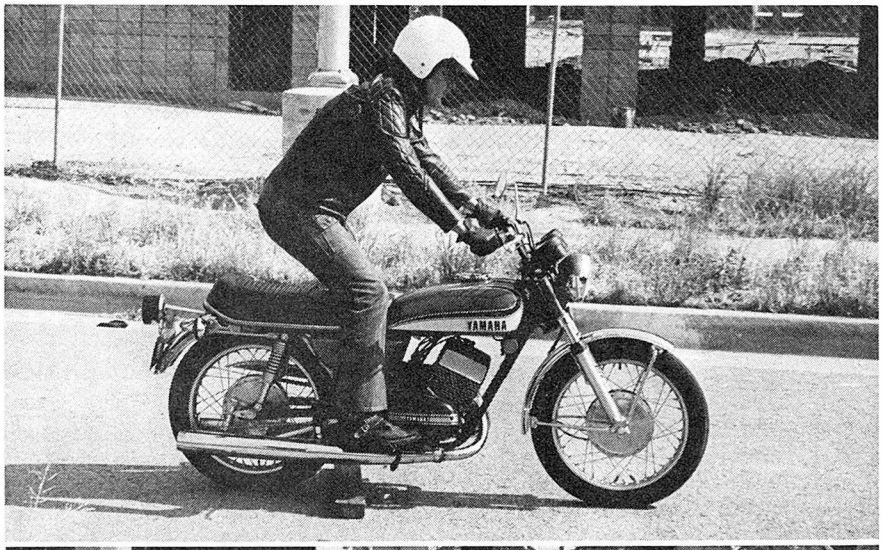
If you fail to steer into a skid the pavement will grip the front tire, eventually, to twist the handlebars out of your grasp and turn the front wheel inward. When that happens you're caught in what is called a ''highside'' and the machine will spit you right off the seat and onto the road ahead of it. It may even flip on over!

road hazard that they could have ridden over—IF you can maintain control by shifting your weight to the rear until the rear wheel clears then back to center *after* the rear wheel touches back to earth you can ''roll'' over objects as big as two-feet in diameter at speeds as high as 35-miles-an-hour. It's not the kind of thing you should practice, and the odds are definitely against your making it, but those same odds are far better when you know what you *should* do to have any hope of making it without a crash. If you hesitate, you're likely to hit the object-in-the-road a glancing blow that'll wrench the handlebars from King Kong's grasp and you find *yourself* a flying projectile instead of a rolling one.

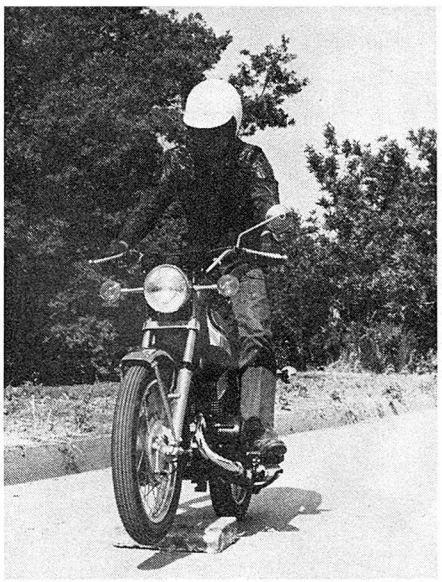
We're getting ahead of anything like a logical sequence of learning but your dirt-riding days are the ones to think about what to do if the day arises when you ''know'' you're going to crash. All that rear wheel sliding is NOT, repeat *not,* to show you how to ''lay the machine down'' like they do in the movies. Stop-action and slow-motion films of staged highway patrol and police accidents prove that a motorcycle sliding along the pavement actually moves far *faster* than one that is rolling along on its tires with the brakes applied just short of locking-up the tires. It's only common sense: the coefficient of friction between rubber and concrete or blacktop is going to be far greater than between metal and the road surface. The longer you can keep the tires in contact with the pavement, the better your chances are of slowing the machine enough to steer *around* the impending accident.

The California Highway Patrol has a test run that all of their ''motor'' trainees must pass before they can qualify to ride a motorcycle in law enforcement. Pylons are used to mark a point where the rider is to *start* applying the brakes from a 40-mile-an-hour run. 107-feet later there are more pylons across his lane (the ''accident''). The rider trainee has to *slow* his motorcycle enough to be able to steer around the ''accident'' and on down the road in the next lane. The diabolical training crew knows the road and the machines so well that the ''accident avoidance'' course is perfect—if the rider even locks either brake he'll skid into the pylon ''accident''; if he ''lays the machine down,'' even at the instant of the ''brake application'' markers, he'll

Practice riding over road hazard obstacles like a two-foot or longer 2x4. You can almost plan on encountering one in your riding life that, if nothing else, has just fallen off a truck ahead of you.



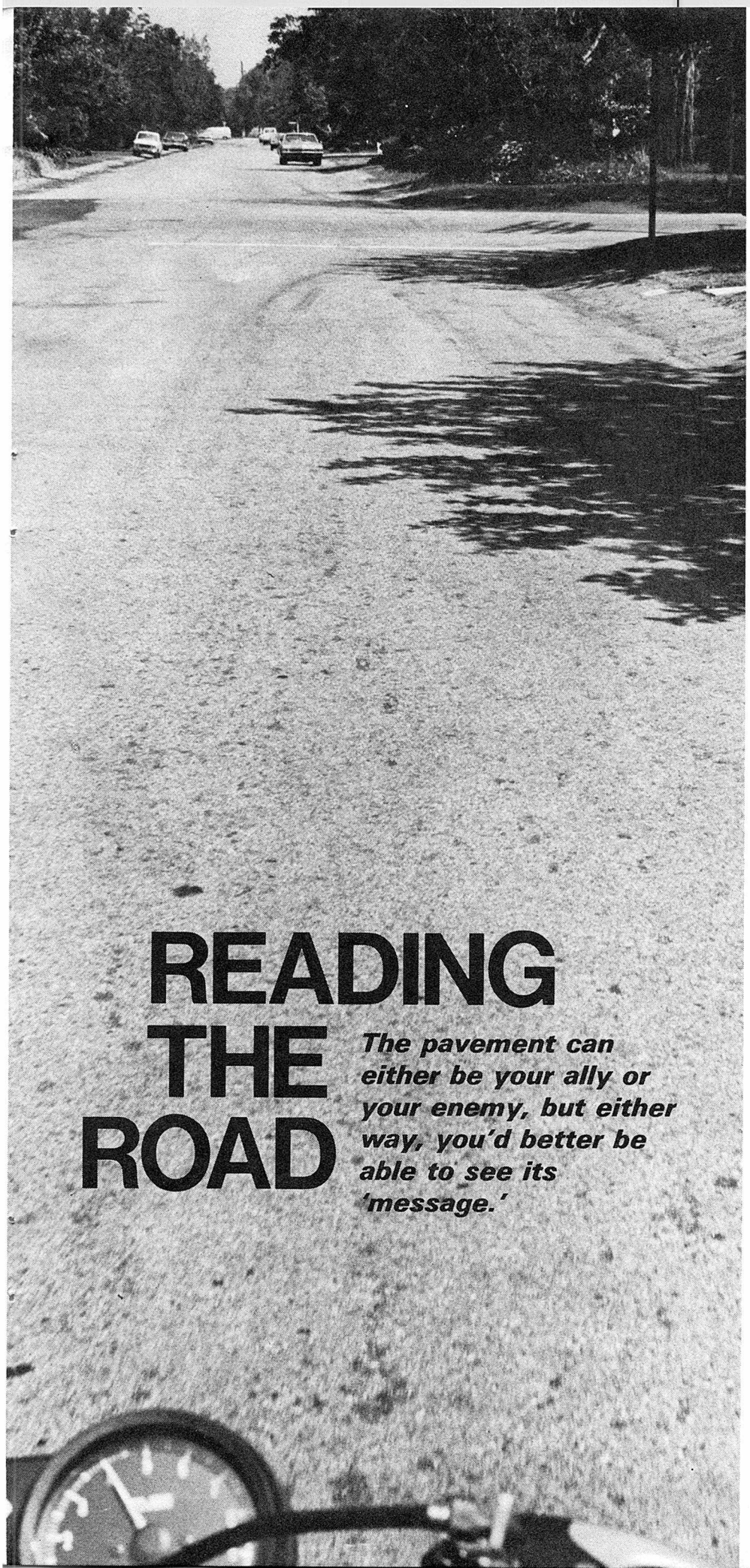
Decide, first, if you can steer safely around it and, if not, then hit it square and as much toward the middle of the object as possible. Stand up in the saddle but with your knees bent, arms straight and fanny back to transfer as much weight as possible off of the front wheel so it and the forks can do most of the work for you. Be prepared to move just your fanny a bit forward the moment the rear wheel hits the ground so you can maintain control. This is the only *time you want to stand while riding pavement—your machine is most controllable with your weight as low as possible and that means sit.*



You can practice riding over slightly larger obstacles to get the feeling of the machine. Be careful not to hit the block or board at an angle or it may catch the edge *of the tire to wrench the handlebars from your grasp. Keep your knees bent to help absorb some of the impact. Be sure you're completely clear of the obstacle before you sit back down—if you try to ride it out from a sitting position the saddle will try to flick you off like a diving board would do.*

slide into the ''accident'' at nearly 20-miles-an-hour! The *only* way he'll be able to slow enough to miss the ''accident'' is to apply *both* brakes so that *both* tires are barely short of skidding.

These instructors have had a decade's worth of accidents, among both the public and their own motorcycle-riding officers, to find out the best way to ride into or around an accident. To a man, they've proven that the ride-it-out with both brakes on until the last instant of impact is the *only* hope you have for survival. If the bulk of the object you're going to hit is low enough, then stand up on the pegs at the instant of impact and tuck-in your arms and legs that can catch and break as you land or tumble. Forget whatever you've heard about sliding into an accident or hopping off the machine—use that machine and the grip the tires have on the road to scrub-off as much speed as is possible. The CHP officers have a saying; ''If you lay it down, you've already had an accident.'' Most of the time, you can stay upright and in full-on braking control long enough to swerve around the impending accident. With some dirt-riding practice and even more time on the road, you'll develop the confidence to accept the fact that total machine control is your best tool to *avoid* accidents.

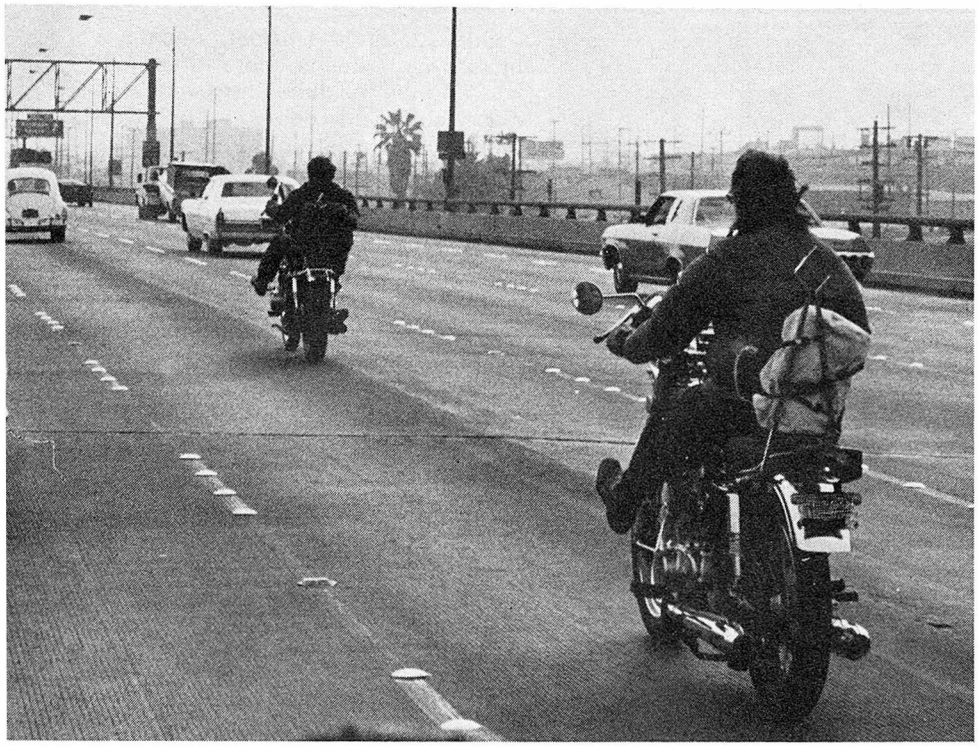


READING THE ROAD

The pavement can either be your ally or your enemy, but either way, you'd better be able to see its 'message.'

Survival on the street, aboard a motorcycle, means more than just knowing the machine and its capabilities. You have to come to terms with the endless variety of surface conditions that'll roll beneath your wheels. Really, there's two ways to learn to read the road: the most comfortable way is to practice riding your machine over all types of surfaces while you practice braking and cornering to see how the changes in traction affect the handling and feel of the machine. The second way isn't quite so comfortable; you just ignore the look and tire-feel of the pavement and greet it with your sliding backside or elbow. An automobile driver doesn't have to concern himself with the coefficient of friction between his tires and the road because his four-tired vehicle will, at worst, spin around a bit, and more often, just spin or slip at one corner. If one or two, or even three tires lose their grip he can still maintain stability. The motorcyclist, however, has only two points of contact with the road and they must serve to help build up the centrifugal forces that make the machine lean smoothly through a corner as well as providing the straight-ahead stability the machine needs to keep a gyroscopic balance. For all the work those two motorcycle tires must do, they must do it with just a fraction of the amount of contact that even *one* automobile tire has. The road surface, then, has to be in your riding thoughts *every* moment you're moving!

So far, we've only discussed the riding techniques that can be developed in parking lot training and off-the-road for gaining control and confidence in the dirt. Those actual steps into the street are something else. Frankly, if you're not confident in a parking lot, you have no business on the street, so learn it well. The students that are trying to qualify for motorcycle officers in the California Highway Patrol spend a full week in their two-week intensive training program in the parking lot and dirt portions of the Sacramento school. Roughly 29 percent of these men, even though each must have four *years* of previous experience driving highway patrol *cars,* are asked to drop out of the course. The reason? They just don't have the skill it takes to adapt to the ever-watchful eye, the ability to change their basic don't-lean equilibrium, or any of the other attitudes and physical skills it takes to ride a motorcycle. If these men can be considered ''unsuitable'' for day-long riding, even with their previous driving experience and the benefit of

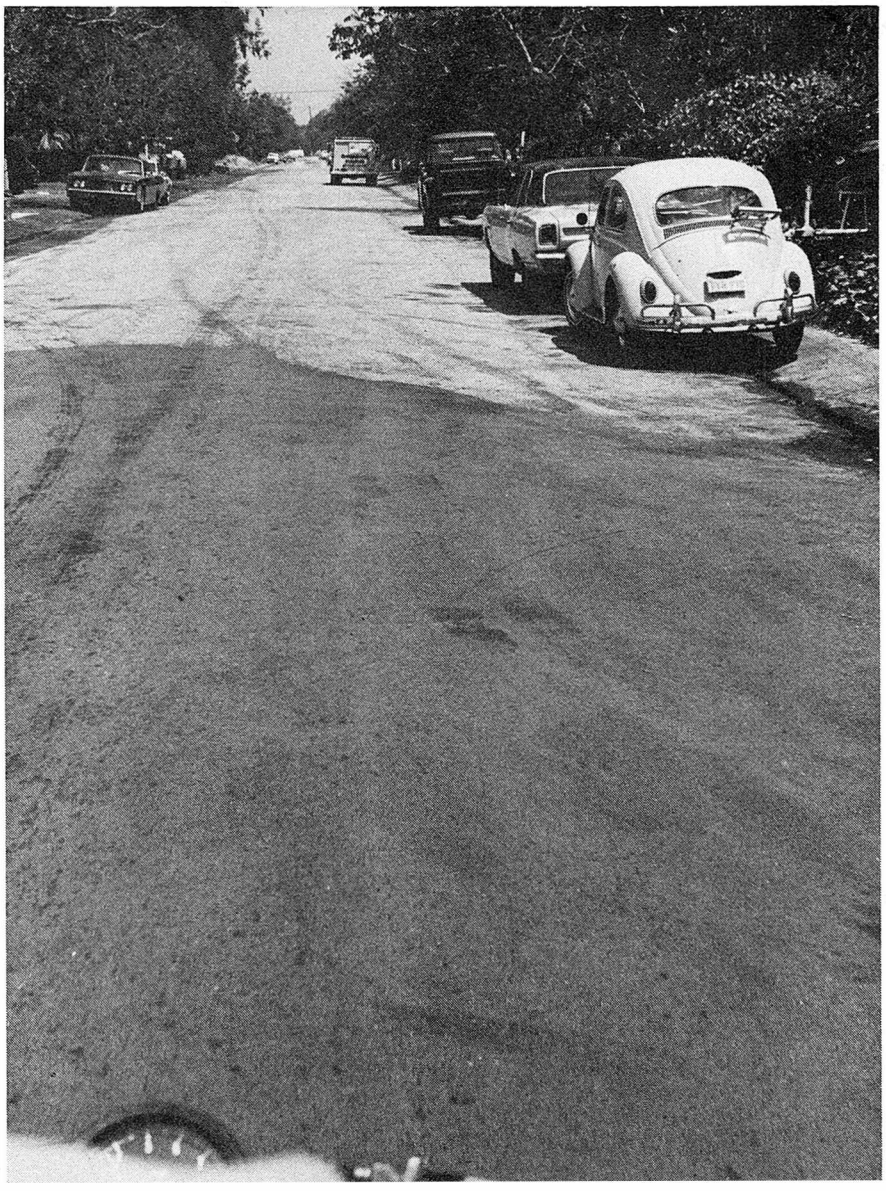


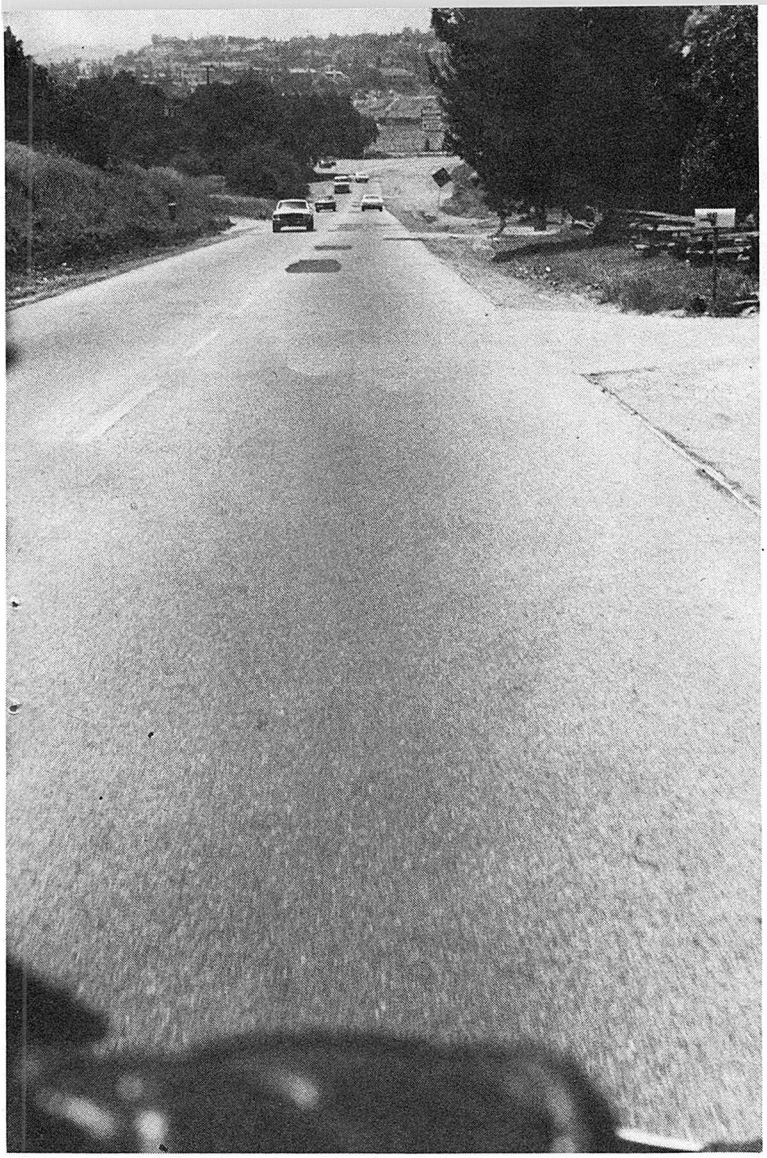
These two riders are asking for it by riding down the center of the lane. Automobiles dribble most of their oil there (that's why it's darker) and only you are likely to ride over it to pick up the grease.

The spots in this street may have been there for weeks or they may be fresh drips of oil just waiting to grease your way to the hospital. It takes thousands of miles of heads-up riding to learn the road. Watch for any *changes in the color or texture of the road surface. This proved to be a simple change in the color of the gravel that was mixed with the blacktop but it* could *have offered less traction.*

the best instruction available, you can bet that there's a lot of so-called motorcycle pleasure riders out there just motoring around looking for the first in an endless series of accidents and near accidents. The point, here, is that you'd best spend an extra amount of time in parking lot or dirt training if you doubt your abilities to devote 100 percent of your attention to riding, or if the lean-with-it-to-corner physical adjustment is hard to "feel."

The rear-wheel-sliding technique you mastered in the dirt can stand you in good stead on the street too. If, for example, you have doubts about your tires' traction in a recently rain-wetted street or one just freshly tarred and graveled, test it with just a bit too much rear brake. Apply the brake ever harder until you can feel that same break-away, brake-locked effect you practiced in the dirt—then let off on the brake, correct the steering, and don't try it again! You've 'programed' your body to know approximately how fast your tires can react to that super-slick surface, and that can serve as a guide for cornering and braking until you're safely out of that grease-smooth danger area. Experienced motorcyclists have a rule for rain: wait fifteen minutes until the rain has had a chance to flood and wash away the layer of grease and grit on the street surface. Those first few minutes of freshly-wetted pavement are the most dangerous because the water is simply mixing with the oil, rubber dust and dirt to form a greasy fluid film over the road. Your tires can grope through water if you ride slowly enough, but the best tire tread pattern made can't cope with that water and oil/dust mix. Just park the machine under a bridge or in a friendly service station awning and wait out that fif-





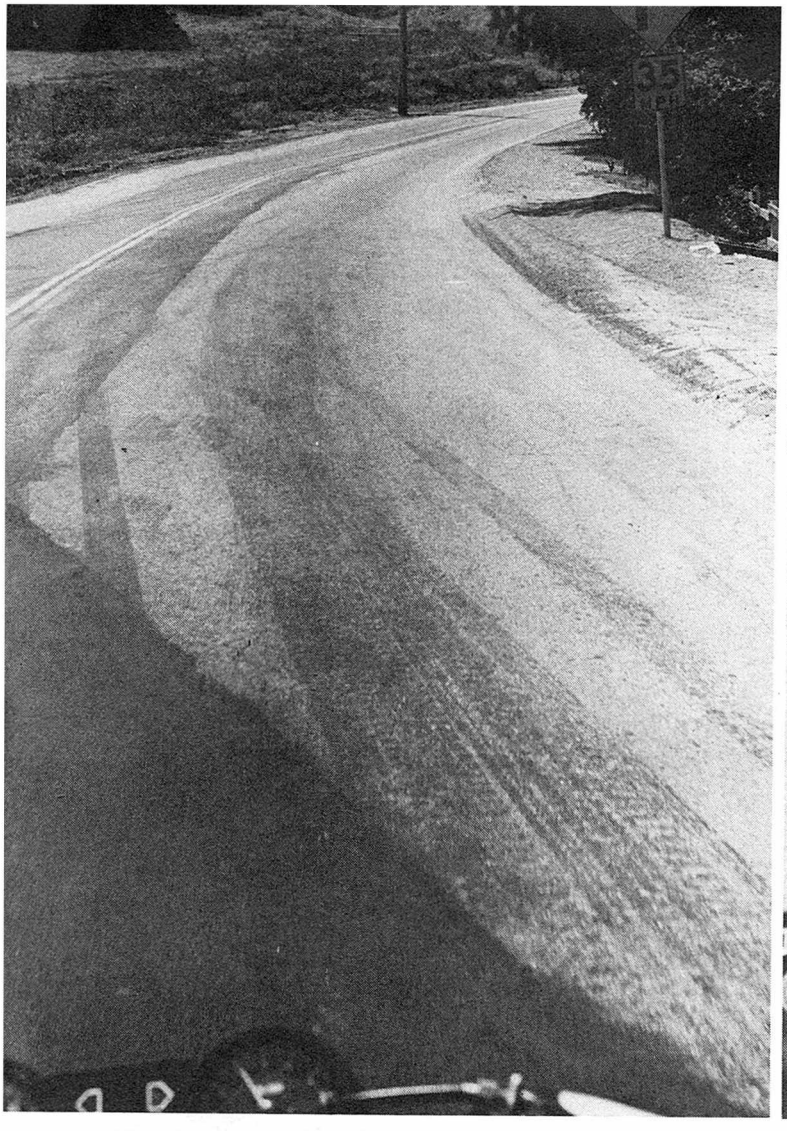
Keep your eyes moving from side to side, from two car lengths ahead to a block or more and to your rear view mirror. Look far enough ahead to notice road patches that may be bumpy or still wet with tar.

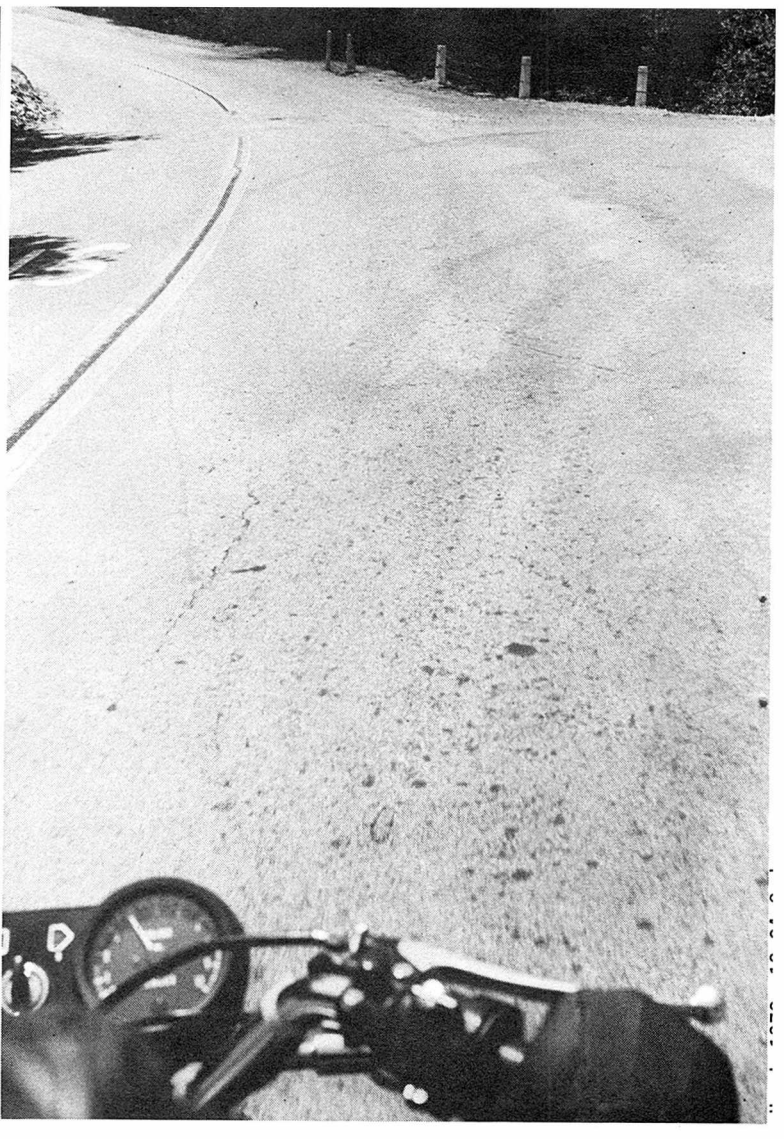
That black strip may be a months-old crack patch or it could be a fresh dribble of black paint or tar or spilled gasoline. If you wait until your tires touch it to see it, though, it's too late.

teen-minute danger period, then proceed on your way through the rain at the slower pace the lesser traction dictates. Remember, too, that those rain-greased roads will affect the automobiles' ability to turn or stop to avoid you, so double the distance between you and any other vehicles. You should always ride with your headlight on, but it's doubly-important in the rain when visibility is reduced. If you think you're ''invisible'' to most motorists in bright and sunny weather, imagine how many more won't even see you in the rain!

The motorcycle rider has more to look for on the road than the automobile driver. Both, of course, need to watch for cars and kids and such coming out from the side, for vehicles turning into and away from them and for unplanned stops by others. The driver, though, doesn't have to worry about the road surface to the extent that the motorcyclist does. You've got to learn to watch for what's coming and, more importantly, you've got to translate the feeling in your fanny and through the handlebars into answers to the question, ''How much traction is this surface going to offer my tires?'' Seat-of-the-pants is essential to learning the techniques of banking through the corners and it's essential in learning how your tires are going to react to the road they roll over, no matter what the surface may offer. Most riders look ahead at least a block but you have to be *aware* of what's happening all the way from your rear tire to the road and surroundings a block ahead. You might, for example, spot a partially flooded street a block ahead where some guy is over-watering his lawn. Your eyes must automatically relay a message to your reflexes to slow down up there, be ready for water, *and* still take into account the road you're rolling over without actually having to focus any closer than two or three car lengths ahead. Your eyes have to keep moving from a point roughly two or three car lengths ahead to a block ahead (maybe a mile if you're cruising down the freeway) to both sides and, of course, to the rear view mirrors. Your attention, though, should be aiming, *not* steering, the motorcycle where you want it to go and, obviously, to do that, you're going to have to look ahead for nearly a block. Your parking lot and dirt-riding sessions should have given you some hint that this aiming is the secret of confidence and stability—you can't really feel confident if your eyes keep roving back to the area underneath the front tire just to be sure, we'd guess, that it's still there.

The most telling indicator (as we've mentioned in rain-testing the traction the road offers) for road surface is your brakes. Learning to use the brakes on the road is a whole different ball game

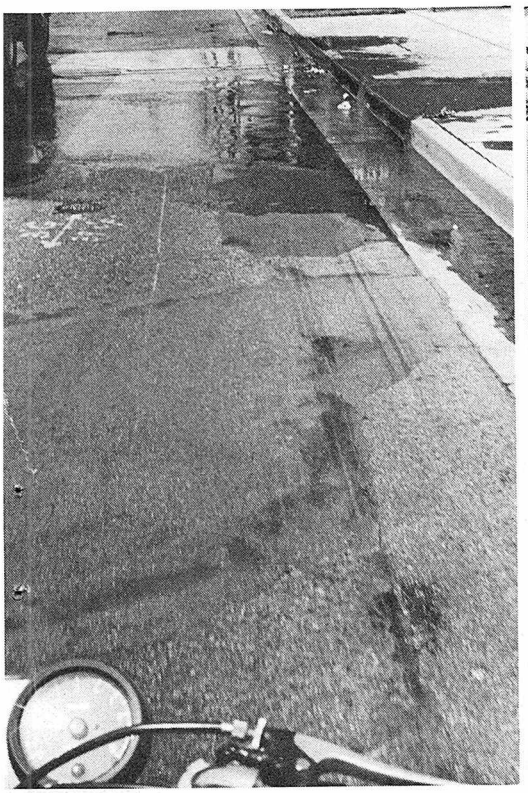


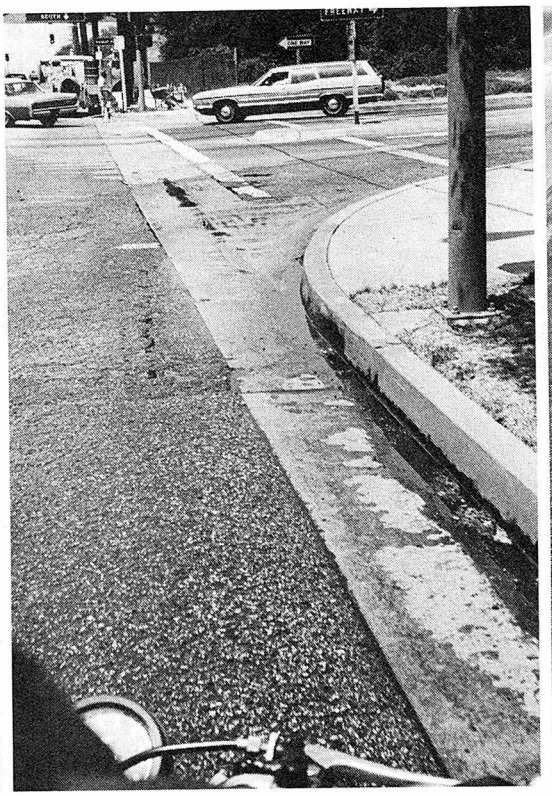


There's three types of road surface here and all of them are right in the middle of a corner. Their edges can offer balance-upsetting humps and loose rocks and their surfaces may provide different traction.
Watch the edges of any patches in the road. They often crumble to leave small rocks in the road that (particularly in a corner) can act just like a few marbles thrown beneath your tires.
Watch for dirt side roads. Cars coming on and off the paved road can kick and carry loose gravel and dirt onto the paved roadway that will powder your tires for an instant to give nearly zero traction.

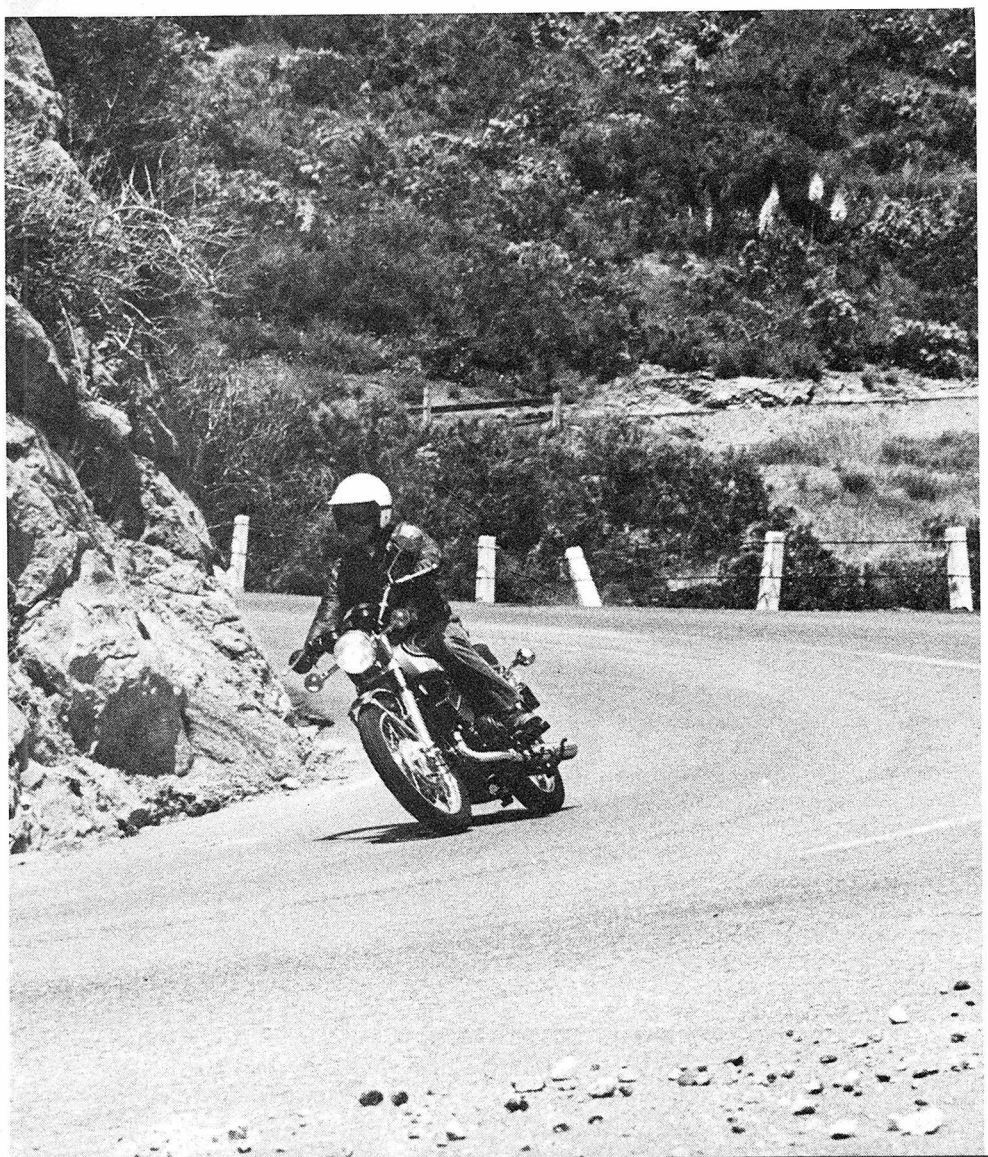
from learning to use them on a parking lot, because the road surface will vary so much. Your speeds on the streets and highways will naturally be much greater than they were in that parking lot or dirt patch so that, too, is going to affect the performance and feel of front and rear brake applications. All this is part of the reason why it takes months to really learn to ride a motorcycle on the street; there's just too many variables to program into your brain. Experienced road riders find, for example, that the front brake has almost the opposite effect on pavement as it does in the dirt—the front brake, if applied with the care and caution that comes with practice, actually helps to stabilize the machine while in the dirt it sets it to wobbling. You can generally feel, by the way the machine squats down on the front forks and rear shocks, how much braking effort is being done by the front or rear brake. Your ideal is to have both brakes doing the same amount of work but, in practice, the weight transfer to the front will force the front brake to do more work. Most motorcycle makers take this into consideration and equip the front of their machines with a larger and/or more powerful brake on the front than on the rear. It may not, then, actually take more lever effort at the front to produce a bit more braking power. There's only one way to learn and words won't do it—practice. Try different amounts of hand lever and foot pedal pressures, first in a series of steady speed (say, 30 mph) tests, to find out how much hand-pull or foot-push you can apply before the front or rear tire will start to skid. Then repeat your braking experiments at different speeds and on different road surfaces until you get the general idea. Each time your fanny feels a different road surface condition, try a few brake tests (with no traffic around, of course) and add that surface to your brain's program of riding reactions. You'll never get all the combinations down, but you'll soon get enough to compensate for the surprise change in road surface.

Some of the road surface dangers are as obvious as rain or railroad tracks, but others are a bit more subtle. No experienced road rider ever rides along in the center of his lane—that's where all the cars drip their oil (that's also why it's blacker than the rest of a concrete road). The worst oil effects are those places where the cars might sit and idle for a while. Stop signs and the lanes a few car lengths back from the stopping line are bad, but the *left* turn lanes are worse because cars will wait longer to turn left than for a stop sign or a red light. Remember, nobody but you is going to drive down the center of the lane to wipe up the mess with





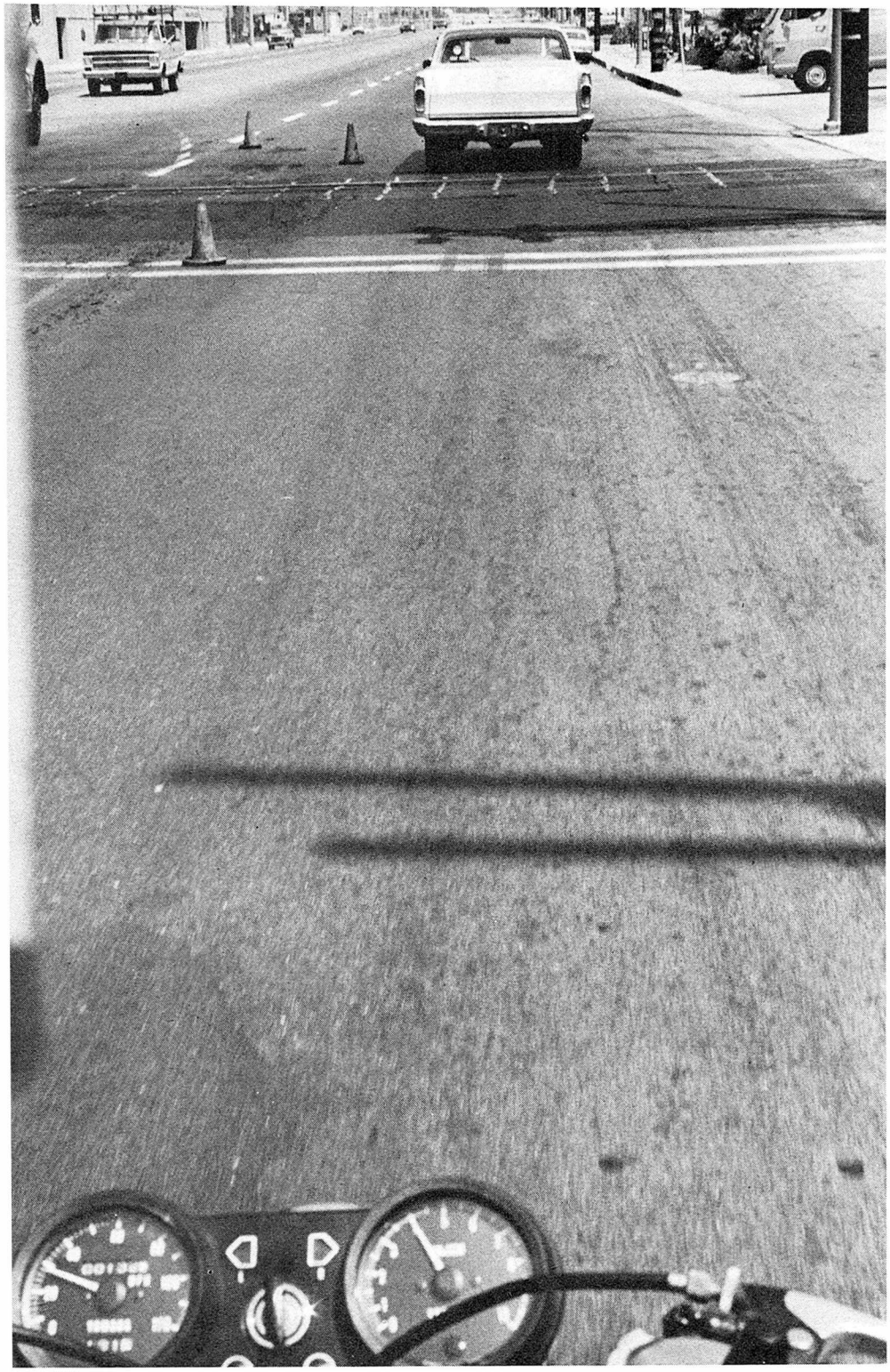
Puddles are obvious dangers but there's greater danger in the area just beyond the water where the slightly dampened surface can be extra greasy. The reflection can hide tire-deep potholes beneath the water.

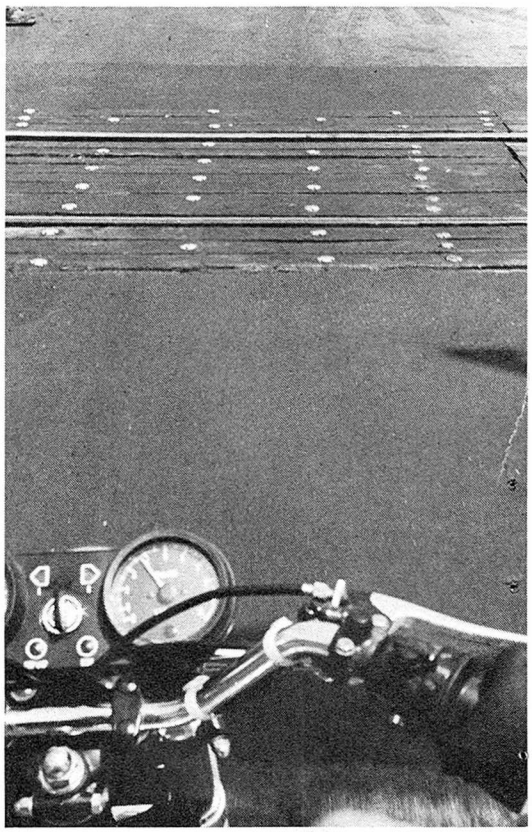


The inner and outer edges of any curves are places to stay away from, especially in hilly country. Cars have thrown thousands of marble-like rocks to the outside of this curve and dirt has spilled inside.

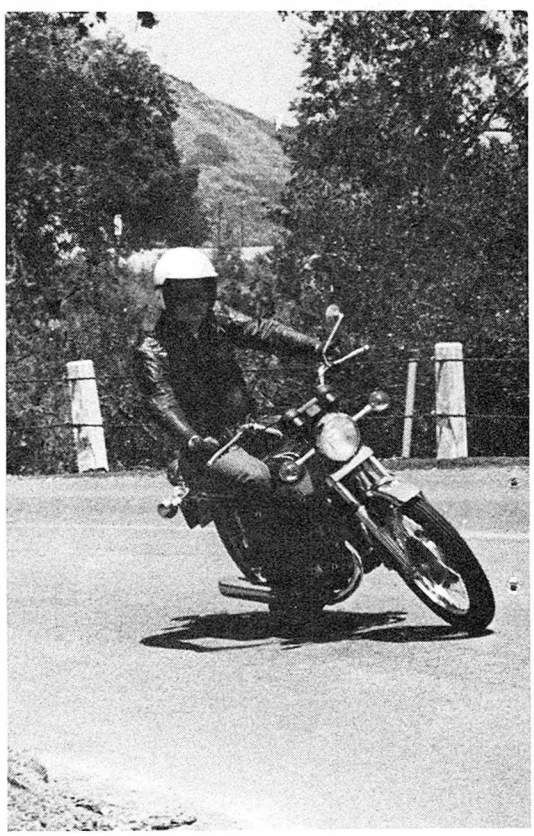
their tires *or* with their sliding backside. If you insist on riding the center of the lane you'll wipe it clean with your tires up to the point that you slip and your machine squirts your body into the road.

Any change in the color of the road should immediately set your danger-warning system into red alert. It may be a simple transition from one color or rock to another on tarred roads or from concrete to blacktop and it may not affect your traction in the slightest, but it *might*, so check it out through your fanny-feel before assuming all is well. That change in color could just as easily indicate that a fuel truck has dumped some oil or tar-softening gasoline. It could be a freshly-paved patch or section too, still sticky in places and still slimy in others. There are five points at each intersection that most motorists fail to ''clean'': the dead center of the inter-



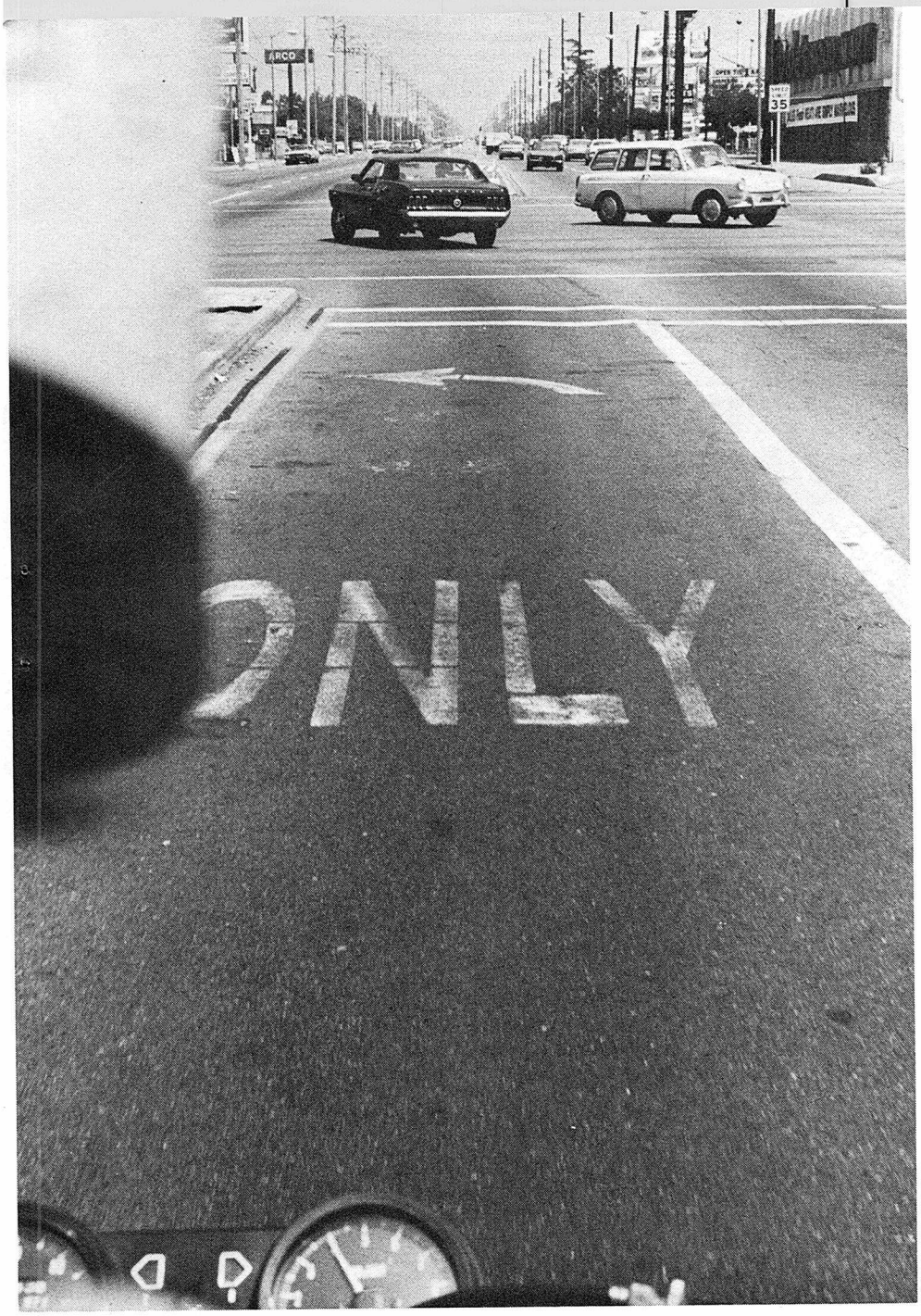


You're lucky if railroad tracks cross at right angles to the road. If the tracks cross diagonally try to steer the machine (before and after the tracks, never steer on them) to cross the steel at a right angle.



section and a spot right at each of the four curb corners—stay out of them if you expect to find predictable traction. Early morning dew can deposit just enough water to lubricate the surface so be especially careful then. You won't fail to notice water sitting or running across the street, but remember that the other side of the puddle has those horrible water/oil slicks.

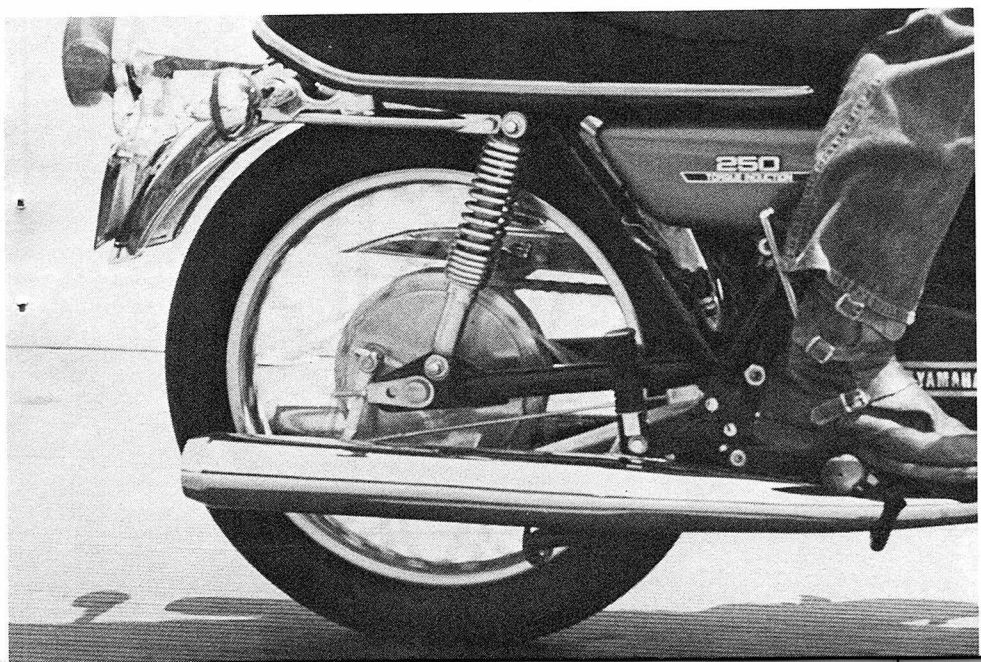
Avoid *any* metal or paint on the street if you can, including manhole covers, arrows, "stop" or "left turn" words, the actual lane divider lines, painted-over lines, tar strips in the concrete and the like—they can provide an instant of traction or a moment of total loss of traction that can drop you if you're not ready. Any water on these metal or painted surfaces can make them every bit as



Two of the worst street dangers (especially if dampened by rain or morning dew): the painted street markings and metal manhole covers—treat them with caution if they're dry and like ice if they're wet.

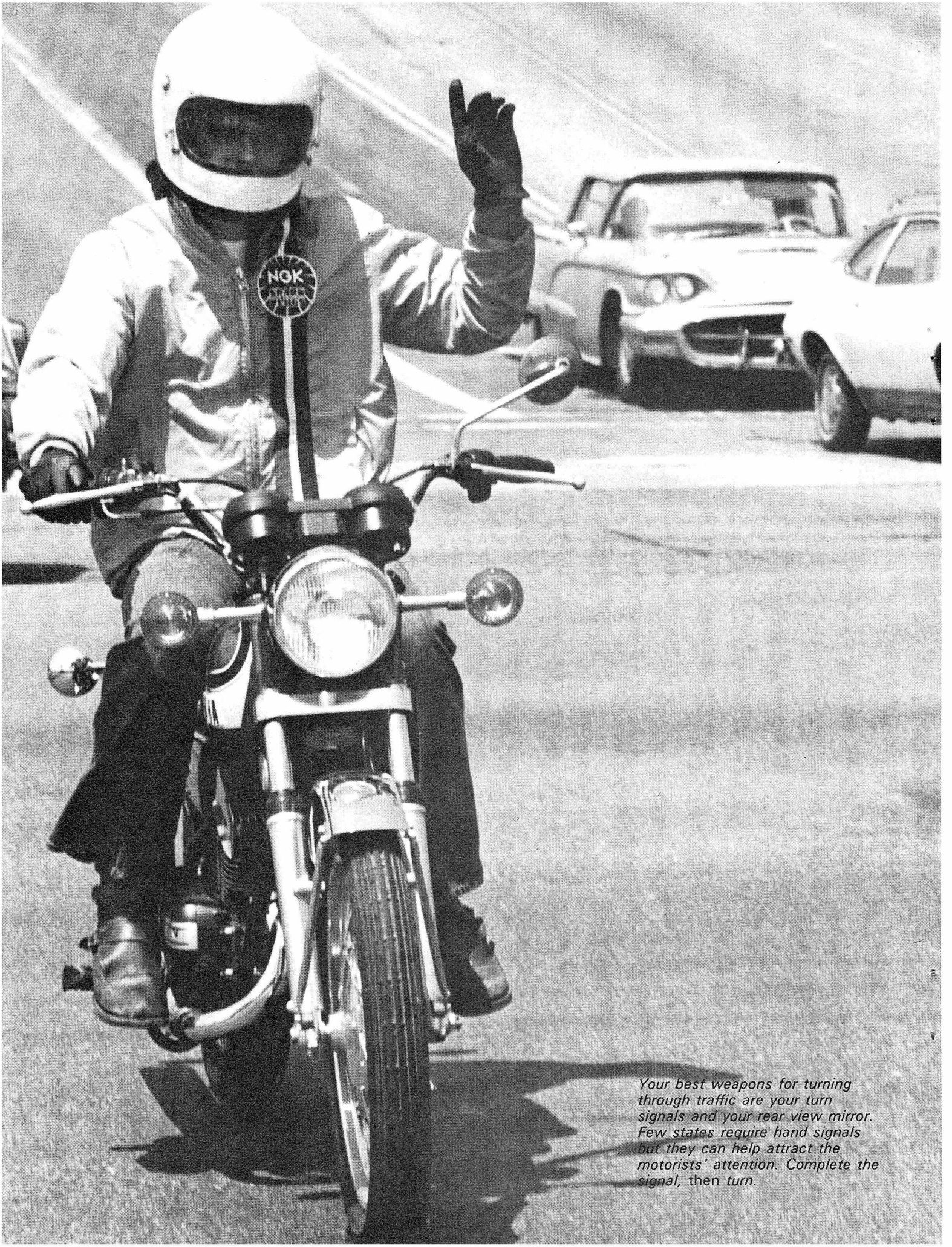
Watch the center of left turn lanes. Cars idle longest while waiting there to turn. The oil, particularly when dripped on painted markings, can coat your tires to make you turn into a sliding accident.

It takes practice, on all types of road surfaces and at varying speeds, to begin to understand how your tires will react to cornering, stopping and rolling. You have to develop a feeling for the road through your fanny.



slippery as ice. Try to cross railroad tracks at as much of a right angle as possible. If there's no traffic, pick that point to swing from one side of your lane to the other so you cross the steel rails and guards at as close to a 90-degree angle as you can and be prepared to stand up a bit with your weight to the rear to react to the machine bounding over the usual dips and ruts on both sides of the tracks.

The whole idea is to look ahead far enough so you know what's coming, then to get the feeling of what you roll over and its effect on traction and stability firmly planted in your brain so you know *both* the road and the machine and how they get along together *everywhere.*



Your best weapons for turning through traffic are your turn signals and your rear view mirror. Few states require hand signals but they can help attract the motorists' attention. Complete the signal, then *turn.*

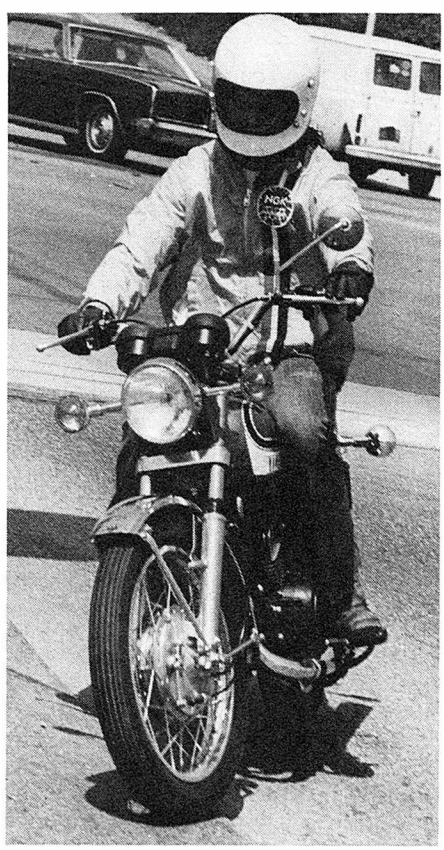
CORRECT CORNERING

The essence of motorcycling lies (or leans, in truth) in the feeling and art of banking through turns.

Just cruising down the endless interstates may give you a feeling of wind-in-the-face freedom and a oneness with nature but those countless miles of straightaway just don't show you much of motorcycling. The one thing that makes the motorcycling experience different from any automobile is the way the thing corners. You can fold down the windshield on a Jeep or a dune buggy or sports car and experience most of what a motorcyclist does on straight roads. That first tight off-ramp corner, though, gives the motorcyclist a sensation totally beyond the experience of the automobiles-only folk. There's only one word to describe the feeling, thrilling. Thrilling in the sense that a carnival ride will thrill you; thrilling in the sense that you truly feel the master of your machine; but thrilling mostly because you're defying everything nature taught your body it couldn't do from the moment you learned to crawl. You and your machine are actually leaning over without falling down and, further, the faster you go the more you both lean and get that uncanny sensation of greater gravity that comes from centrifugal force. An automobile driver gets a taste of the centrifugal force feeling when he speeds through a banked corner but you get it at virtually every corner. As for the feeling of banking the machine and your body over, well, that's yours alone as a motorcyclist.

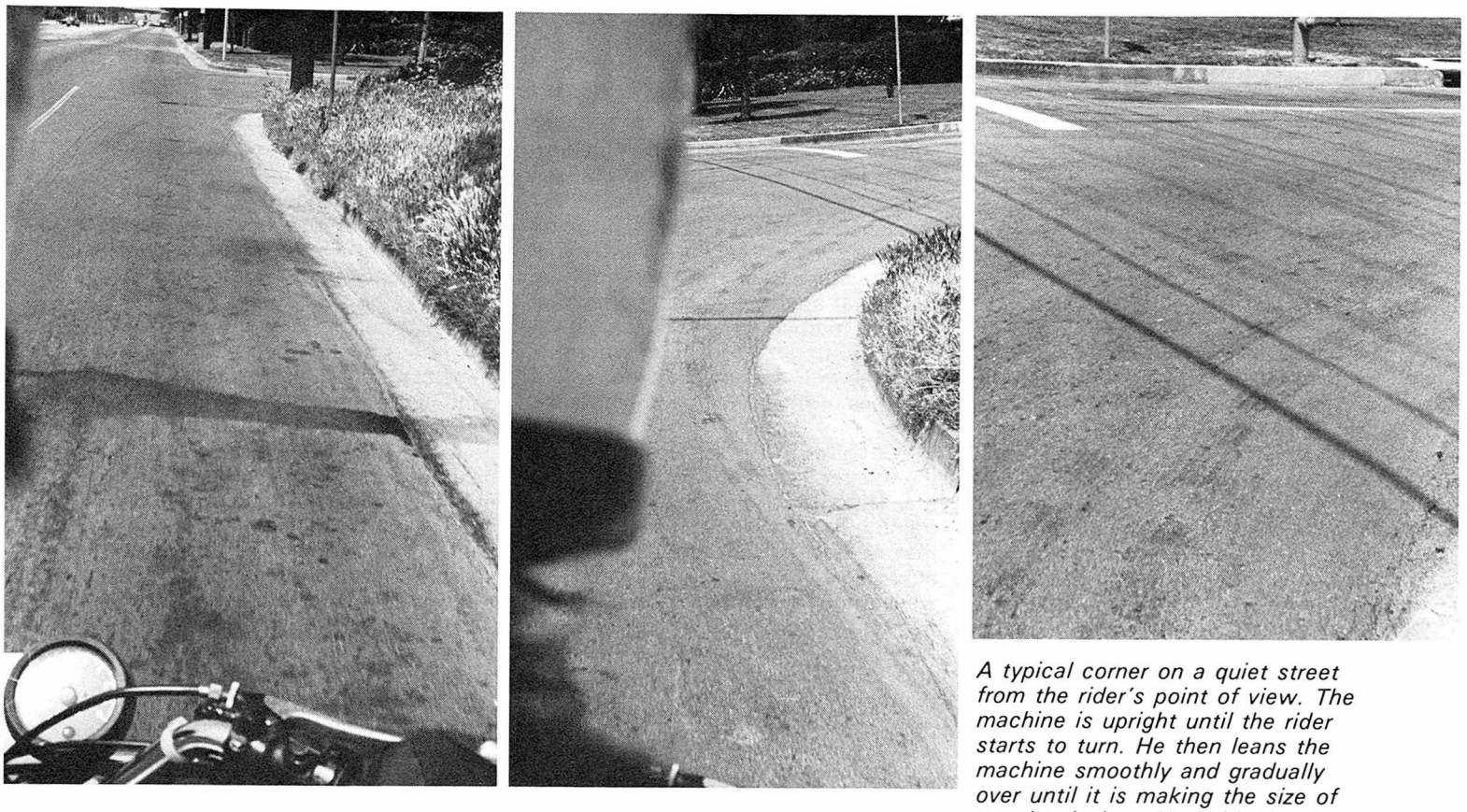
No human feels really at home on a motorcycle until he trains his body to accept the fact that it's okay to upset his equilibrium by leaning the machine and leaning with it to negotiate a corner on a motorcycle. Some people adjust to the new experience rapidly and others *never* feel at home leaning through corners but all of us need some hours in the saddle to get used to the idea that you don't steer a motorcycle at anything much above a walking pace; you lean it and aim it where you want it to go. Motorcycling, then, is more the art of feeling and willing the machine around than a purely mechanical notion of steering and levering like you must to control a car. The terrifying thing about motorcycling is that it's very difficult to tell when you've taken a corner *too* rapidly and, often, impossible to correct. That's why it's so important to practice, particularly on your very own machine, to get a feeling of what the machine will and will not do under *all* types of road and speed combinations.

We spoke to Larry Sturges, one of the master-instructors for the California Highway Patrol's motorcycle training school about the methods that he and his partners use to train new riders. One of the best lessons, we learned, is one that starts the rider off from a parked position. Imagine that you're sitting on your machine and that it's parked at about a 30-degree angle to the curb in the usual drive-in position. This time, though, the rear wheel is resting against the curb, not the front and the machine is faced toward oncoming traffic. You want to pull out into the traffic so you must make a 150-degree turn. The CHP students must perfect this exact maneuver on their equipment-laden Harley-Davidsons and they must do so without swinging out across the street centerline. With a Harley, the maneuver is so tight that the student *must* lean the machine over *before* he moves away from the curb. That means that he has to start out with his right foot on the ground. The students soon learn that it takes some real "inside" knowledge of motorcycling to even be able to make the maneuver. First, the machine must be leaned nearly 45-degrees; second, the rider's foot must be placed as far forward as possible so the machine can pivot around it without his having to drag that foot along the ground;



This rider is steering his machine rather than leaning it into the corner. At walking speeds you'll have to steer but, as speed increases, you'll find that all you have to do is lean the machine to turn a corner.

Note that the front wheel is barely off a line with the rear and that the rider is leaned well over with *his machine. If you don't feel perfectly at ease leaning the machine through corners you're* not *ready.*



A typical corner on a quiet street from the rider's point of view. The machine is upright until the rider starts to turn. He then leans the machine smoothly and gradually over until it is making the size of turn he desires. He holds that lean through the corner and, again—gently, eases the machine back into an upright position. There is very little muscle movement involved—most of the

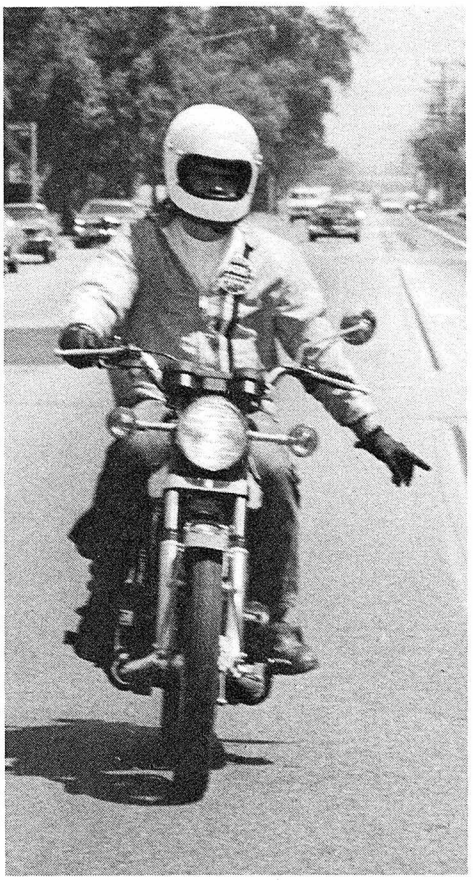
third, the only way the machine and rider combination can achieve any degree of stability is if the rider looks down the road a few hundred feet while he makes his turn—if he looks down at the front wheel he'll lose his balance and fall or make the turn so broad he crosses the centerline—the idea is much the same one that tightrope walkers use to maintain their balance and it's basic to complete control of a motorcycle too. The riders learn that the machine will turn far quicker if it is leaned to the side. The whole sequence is one that would benefit most new riders and it can be accomplished in a parking lot or on a quiet side street near your home.

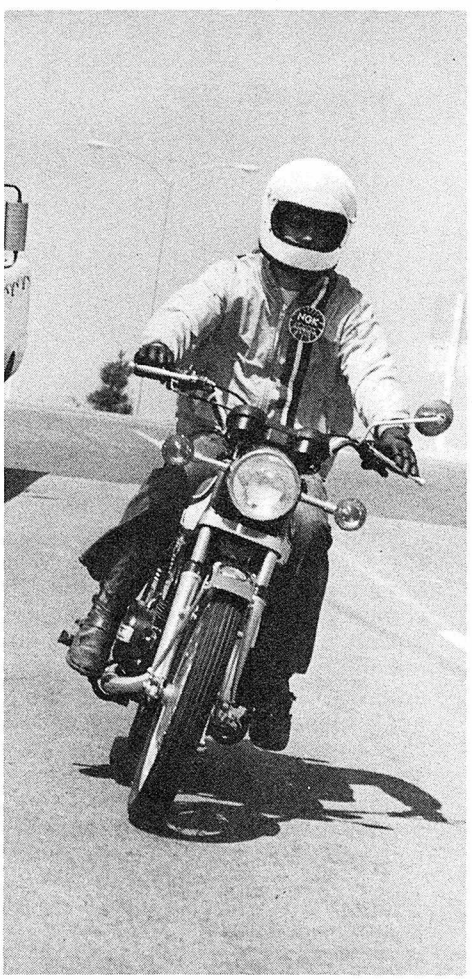
The next phase of the California Highway Patrol's training program (and most police and sheriffs department motorcycle training schools follow similar techniques) is to train the riders in how far they can lean their machine by riding around in a constant-radius circle with the footpegs (or sidestand or mufflers or whatever part touches first) actually dragging the ground. This is the outer limit of cornering for that rider and machine and, believe-the-victims, if you persist in leaning the machine that far under actual riding conditions you'll quickly find the bike sliding out from beneath you. The lesson does teach the riders to lean with their machines *and* just how far they can lean if they have to. When you try it on a bumpy street, though, with changes in surface and lumps that don't appear on a parking lot type of training area, the suspension will work up and down to move the mufflers or side stand or pegs closer to the ground; close enough to dig in or lift the rear tire from the ground and send you sliding across the street. It's another advanced lesson to practice in a giant and smoothly-surfaced parking lot. You might also want to try the cone-weave course that most motorcycle officers must perfect before they pass their riding school tests. You can use paper plates (wetted to keep them from slipping or blowing around) for the cones. Set them about two or three car lengths apart, each one an equal distance from the next. Then ride your machine in a series of es's bends to the right of the first ''pylon,'' the left of the next, the right of the next and so forth. Gradually increase your speed until you are just short of dragging the footpegs, sidestand, or muffler on both right and left hand bends. Watch your body movements while you weave the machine to be sure you lean just as much as the machine does to both the left and the right. Vary both the equal-spacing of the cones and your speeds to learn the principle, not the course. Keep practicing, in the parking lot and in normal street riding, until you really feel comfortable leaning with the machine.

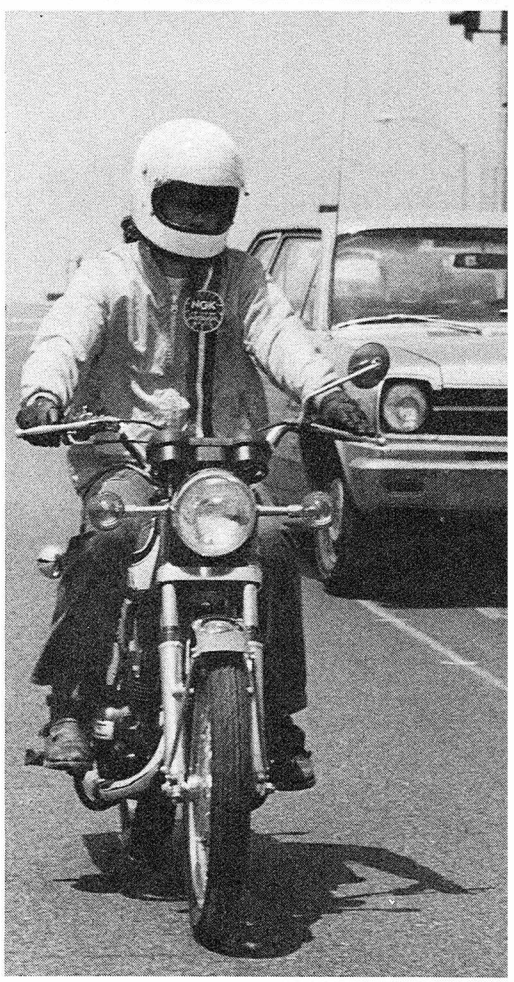
There are those who preach and practice that all braking on a motorcycle should be done with the machine upright. The idea, here, is to slow the machine for the upcoming corner before you get to the corner so that you can concentrate on riding through the corner without having to worry about the changes in traction and in suspension action that braking can effect. Well, we can't really recommend that you *ever* apply the brakes in the middle of a corner—the instant change in traction while you're banked over is almost always going to break one or both tires' traction for an instant—but there's no reason why you have to leave your hand and toe off the brakes just because a corner comes up before you're slowed quite as much as you'd like. You should learn (back to that parking lot again) how applying and releasing the front brake alone, the rear brake alone and both brakes together effect the machine in a corner. Try a corner that is large

enough to require some degree of banking but ride through at half or less of what you *know* is the quickest you can confidently do and try various combinations and pressures on the brakes. You'll find that a front brake application tends to upright the machine at higher speeds and that it tends to lean the machine further into the turn at lower speeds. The rear brake, too, will have an effect on how far the machine wants to lean but the effect is more what you'd expect than the rear—usually tending to lift the machine when the rear brake takes effect (naturally, enough, since your cornering speed is less, your angle of lean has to be less). When you *know* what effect the brakes have on *your* machine when cornering you can predict when and where to brake to keep the speeds through the corners down to what you can control. With a lot of practice, you'll find you can enter a corner with the brakes almost fully-on (just shy of wheel lockup) to let them gradually off as the corner tightens.

The control lesson you *have* to learn from cornering is one of smoothness. Every movement you make on the machine, from throttle control to braking, must be done to keep the machine moving at a steady, never-jerking, pace. The controls themselves must be operated in a smooth and even manner. Don't snap the throttle on, roll it on gently to avoid wheel-spin. Pull the front brake lever and push the rear brake pedal with a gradually-stronger pressure, never just grab a handful of front brake or stomp on the rear brake pedal. You can get away with ham-fisted control operation to some extent on a straightaway but if you try in the corners you're going to crash—a lot. Changes in either throttle or brake settings will load or unload both the fork and rear shock springs. A moving suspension has two effects on cornering and either one can spell a spill; the wheelbase decreases slightly





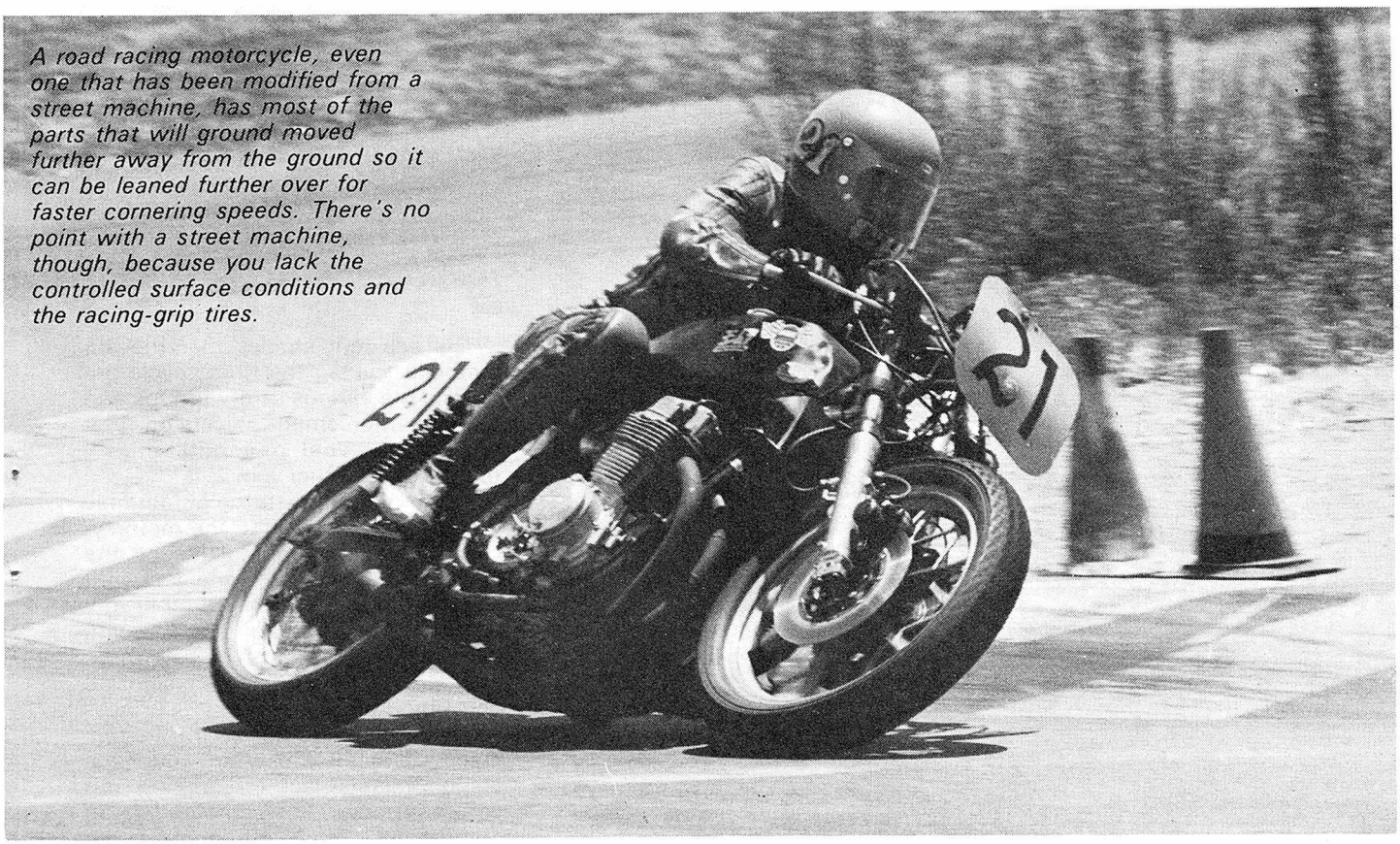


It's not at all uncommon for a driver to make a left turn outside you no matter how illegal it may be. This rider took the precaution to hand signal first and he saw the truck coming. This particular situation was one of those unusual two-lane left turns so the truck was perfectly legal but, if the rider had taken too wide a line through the turn he and the truck would have tangled. Even after the turn is complete, the danger can still exist—watch that car creeping over!

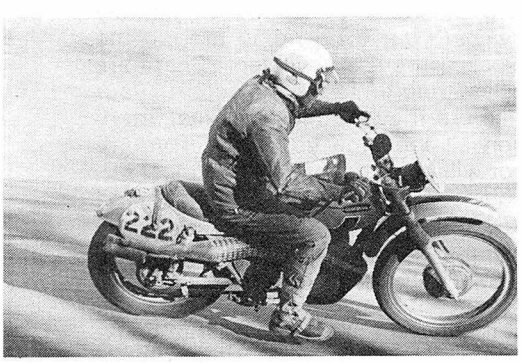
Most cornering accidents happen as a result of the side stand, center stand, mufflers or foot pegs grounding when the corner is taken too fast so that, as a consequence of the excess speed, the machine is leaned too far over. Practice on a parking lot to learn how far you can lean without scraping the underside of the machine and then stay a good 10-degrees more upright in normal riding by controlling your speed.

when the springs compress to "automatically" change the radius of the corner you've established by your speed and amount of lean and the compressed suspension lower the mufflers, side stand or center stand and footpegs closer to the pavement to give them too good a chance to drag or dig in to lift the rear tire right into the air.

The limiting factor on how fast a street motorcycle will corner is often how low the center stand or side stand or mufflers are to the ground—the lower these parts are, the less the machine can lean and/or the less the suspension can move without one of these dangles dragging. The for-real road racing motorcycles move everything out from beneath the machine, sometimes even raising the engine in the frame, to get it to lean further without grounding. Obviously, a too-smooth tarred corner, or any slick spot in the corner, can let the tires slip and lose traction but the resulting accident is still usually caused by the machine leaning a bit further as the tires slip to catch on the centerstand or muffler or footpeg. The trick to quick and safe cornering, then, is to look far enough ahead to see if the road is bumpy enough to make the suspension work and, if so, to reduce both speed and angle of lean to allow for less ground clearance. Since a brake application can force the machine down on its springs, *never* apply *more* brake in a corner. If the brakes are still on when you enter the corner see to it that you're going slow enough to allow a gradual and gentle release of the brakes as your machine leans into the corner. The slightest dab at the brake pedal or jerk at the brake lever while banked over can ground the centerstand or muffler or footpeg to send you and the machine flying. Similarly, a rapid handful of throttle can break the rear tire loose to force the machine to lean far enough to ground out. Smooth, remember it!



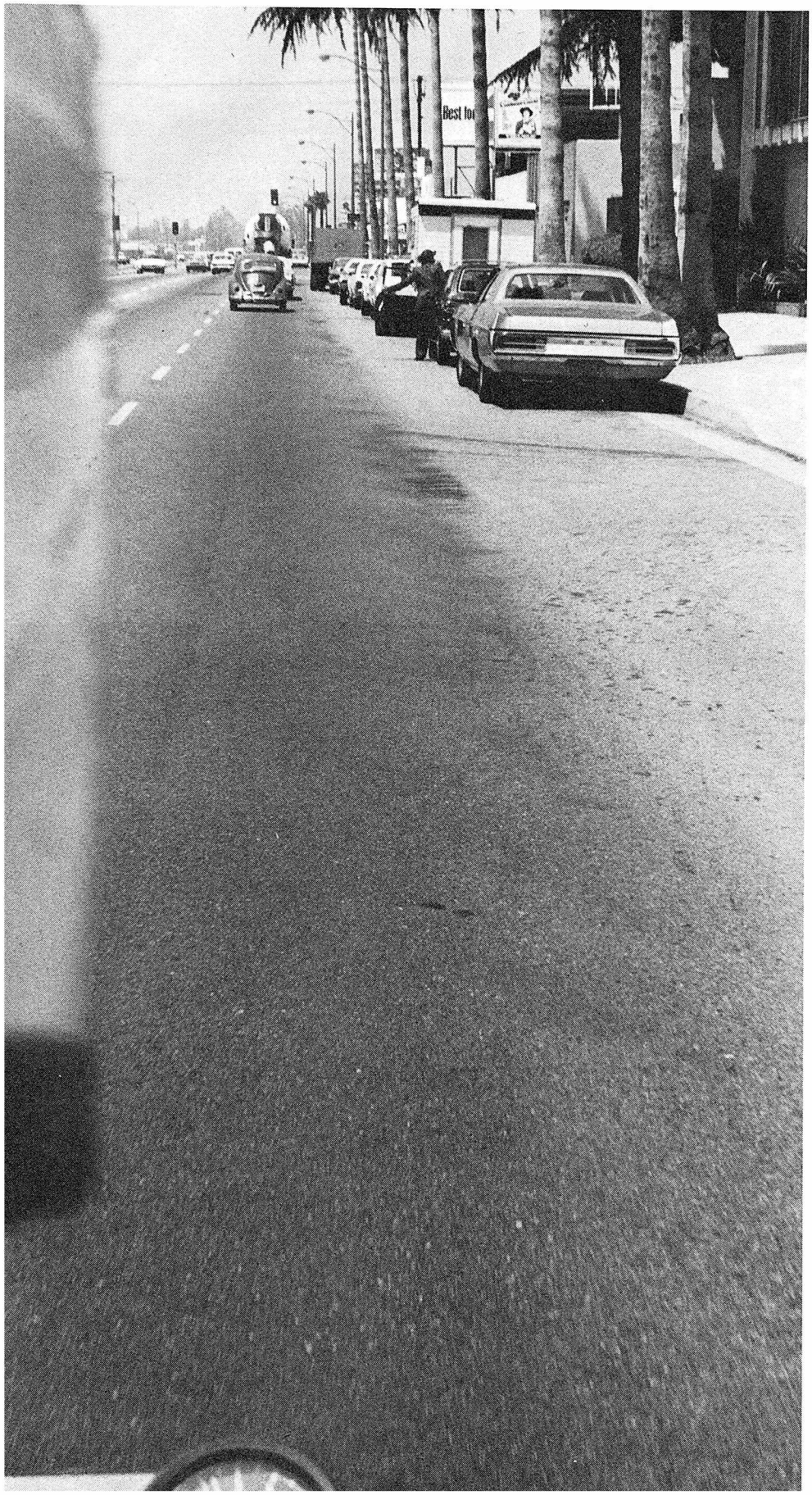
A road racing motorcycle, even one that has been modified from a street machine, has most of the parts that will ground moved further away from the ground so it can be leaned further over for faster cornering speeds. There's no point with a street machine, though, because you lack the controlled surface conditions and the racing-grip tires.



Knobby tires are not meant for the street. This professional factory rider finds that the rear end is sliding out as the knobs wiggle their way out of traction and he is actually steering out of the corner to correct the skid. The worst feature of knobbies is that they're just as liable to grab a hunk of pavement—they're totally unpredictable.

Stay well away from curbs on the inside of the corner. There's often a traction-robbing accumulation of debris and, worse, your machine may scrape the curbside as you lean through the corner. Applying brakes in a corner will dump you but you can enter with them on and gradually let off on the pressure if you practice to get the feel of it all.

"INVISIBLE" DEFENSE

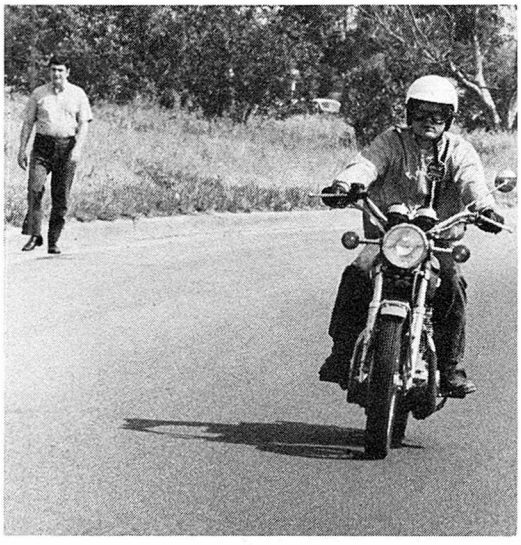


Survival on the street is strictly and exclusively* your *responsibility.

The accident studies that the automobile clubs, the motorcycle industry, the various safety groups and the law enforcement officers on rider accidents reveal one outstanding thing when another vehicle is involved with the motorcyclist; the automobile driver did not even SEE the motorcyclist. If you're going to ride on the street you'd best face the fact that you are literally *invisible* to other motorists! Since they don't see you, you have to see them first. You can, then, add virtually everything in sight to your thoughts about road surfaces and maintaining a feeling for the machine beneath you. Add your machine's relative lack of stopping and cornering power, as compared to an automobile's, and you should begin to get the idea; the odds are definitely *against* your even riding around the block without an accident! There are ways, though, to put the odds on your side but they require your total attention all the time you ride—if you're not willing to devote some concentration to your riding then be prepared to hurt a lot because the accidents *will* happen to *you.*

We interviewed and rode with dozens of riders in the process of gathering the material for this book. The ones that had accumulated 200,000 miles and twenty-years or more of completely accident-free street riding shared several things in common besides an ability to survive and thrive against the odds. The *one* comment and attitude we heard and felt most was these men's confidence in their ability to ride and their supreme self-confidence in the *fact* that they were not going to have an accident, ever! That's a far cry from the ''kid's'' cock-sure first ride, as far as years of self-protective riding can make it. These guys have been riding for ten-times the *life*times-n-the-road that most of us will ever see and all of them still spend every riding hour looking for new hazards, new road surfaces, new feelings of every type that are telegraphed through their machine's tires to their thought and equilibrium centers. Every word and idea you've read so far is constantly

Stay a half-lane away from parked cars whenever possible to give yourself as much of a safety barrier as possible and to better increase your field of vision. This stop sign was hidden by the truck's camper.

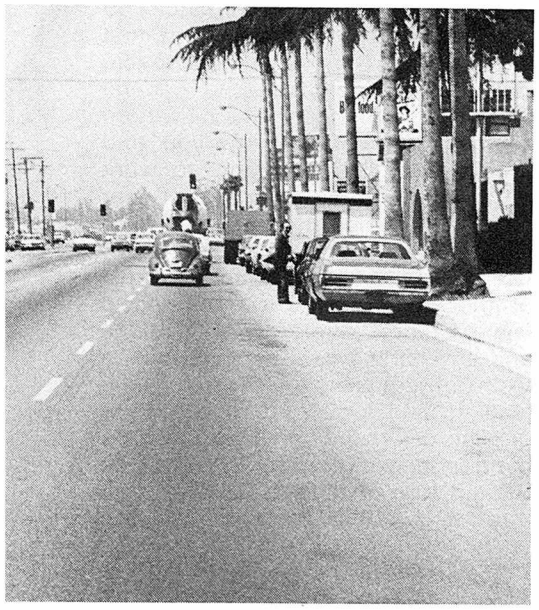


Steer well clear of any pedestrians. There's no way to know when they may decide to dart across the street. Your machine presents such a small image from the front that they actually may not even see you.

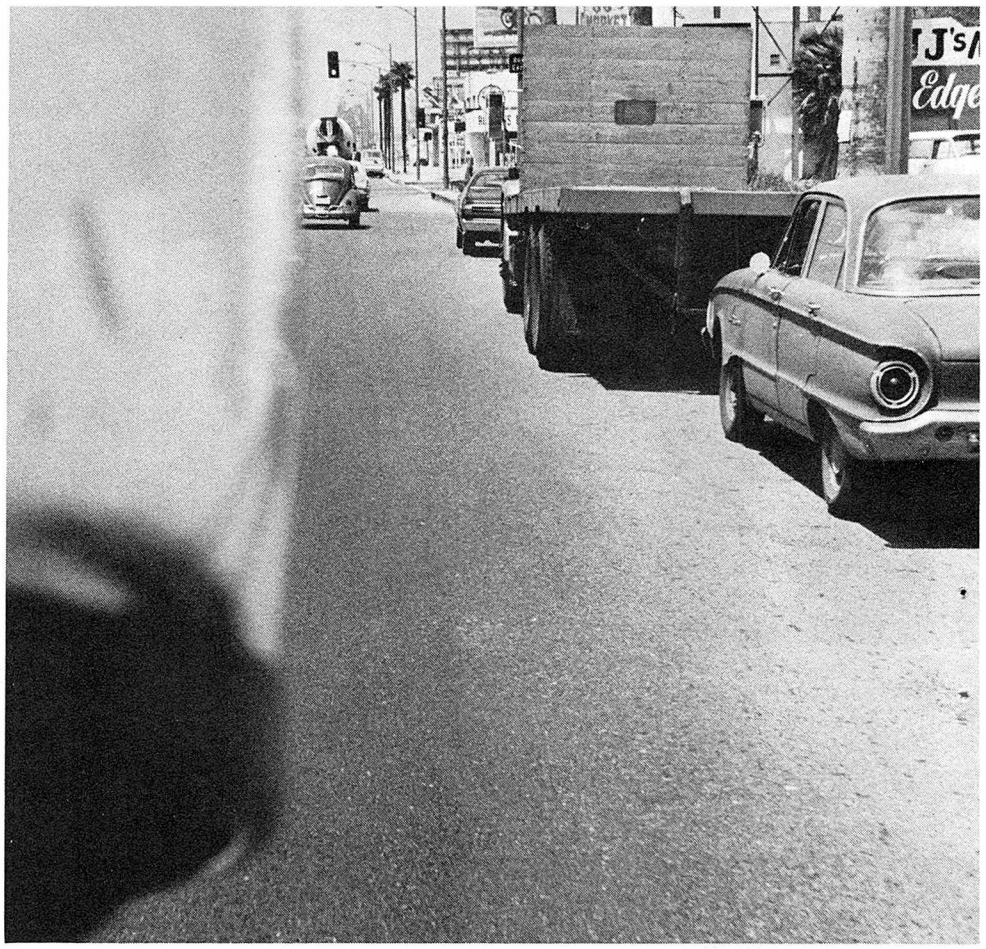
going through these men's minds as they ride, *every* time they ride. They *know* they're not going down because they're too alert to have anything that could possibly be called an "accident." Nothing surprises them because they saw or felt or sensed it coming and they're all ready reacting before the danger even comes close. They know that every motorist and pedestrian and dog and water puddle is trying to get them; to catch them unaware; to shock or surprise or threaten them to make a too-quick movement or to freeze and not move at all. No, it's not the paranoia of *thinking* the world is out to throw you off your machine, it's a conditioned adult thought-pattern of facing the *reality* that only you can protect yourself. It goes a bit beyond the "defensive driving" you may have been exposed to in a driver education class to include the total environment—the motorcyclist has the sensual pleasure of participating in that total environment as he rides and, if he expects to survive, he has an equal responsibility to be aware of it's dangers.

The self-confidence you need to *know* you won't have an "accident" (a pre-thought accident-*avoidance,* of course, but *nothing* that will catch you unaware) can only come from first knowing the basics of motorcycle control *and* riding-feel, the general nature of the dangers (like oil-wetted lane centers) that can harm you, and then putting all you know to work every moment you ride. One of your best defenses is simply space. Try to leave as much room as possible between your motorcycle and the rest of the world. Try, for example, to leave a half a lane between yourself and any parked cars by riding along in the *left* tire groove of the right-hand lane. If you're passing cars that are parking or driving slowly in the right hand lane swing out all the way into the left side of the left lane to leave that half-lane plus between you and them. That way, if one of those cars does try to swing out into your lane or if someone opens their car door you'll likely miss it completely or, at worst, have a few moments more time to react by slowing, speeding, or turning to avoid the "accident." There's more wisdom to not skirting the edge of a line of parked cars; you get a better view of cars that may be coming up from driveways or parking lots or side streets whose corners are hidden by parked cars. Look everywhere! Every experienced motorcyclist has at least one tale of a car he saw moving *beneath* a giant truck or a dog he spotted beneath the wheels of a car or a childs ball rolling out toward the street from beneath a parked vehicle with (you can safely assume) the child in hot pursuit. Leave space for your ever-roving eye to scan from house front to house front on the left and right as you ride along with an equal number of glances into your rear view mirrors and along the

This driver stopped on his way out the driveway to look in both directions but you're a fool if you think he saw you. *Slow, honk, and swing out well away from him as you pass.*



That guy may just be getting in his car and he may be opening the door to let a passenger out that could walk right in your path. If you assume the worst you'll never be surprised by "accidental" moves.

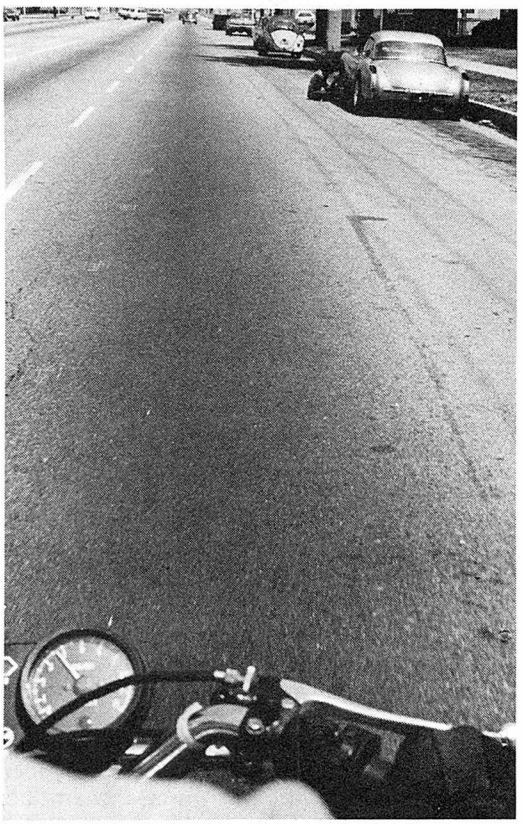


Get used to assuming that any big truck is hiding a car just waiting to jet out into the street in front of you. Often, trucks are high enough so you can get a glimpse beneath their axles of the other side.

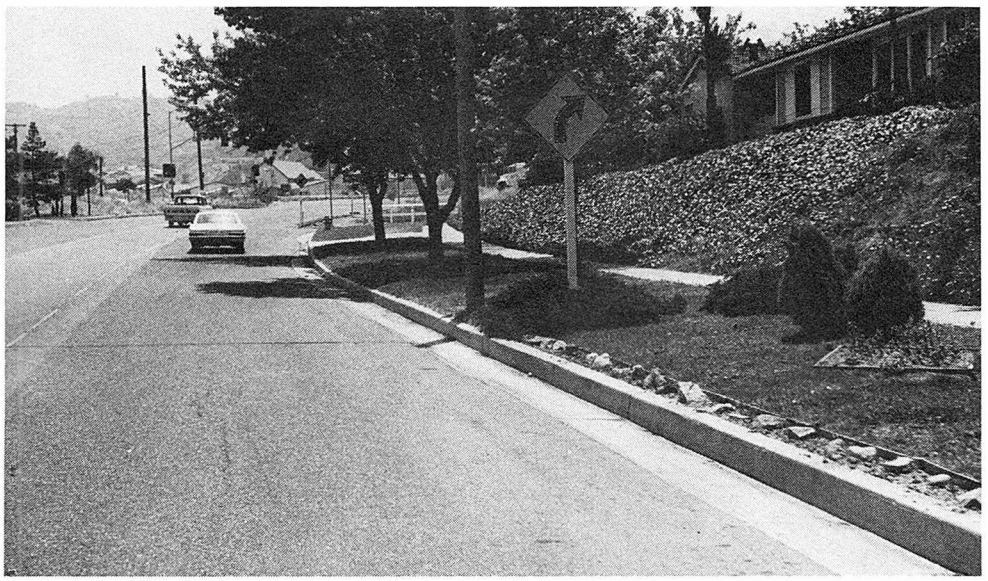
roadway from two car lengths to a full city block ahead. Remember, it's only an "accident" if *you* forget to look soon enough to see it coming. If you know it's coming you can use your machine's superior maneuverability to avoid it.

The number one "accident," the killer that stalks all motorcyclists, according to most accident studies is the driver making a left turn out of oncoming traffic. Driving with your lights on helps to make you a bit more visible but you still *must* assume that everyone that's turning left is going to do so the moment you get there. If the right hand lane traffic will allow, ride along in the right lane or, at least, in the right tire tracks of the left lane to give yourself some room to move if that left-turner decides to do it just in front of you. Watch his front wheels for any tell-tale signs of the slightest movement that might signal he's not seen you and that he's about to turn right into you or in front of you. Try to ignore the presence of a dog nipping at your pant leg—seeing him latch onto you won't help and your distracted vision might lead you broadside into a car or a car door. The best defense against dogs is to simply crank it on to outdistance the animal's planned point of intercepting you. Again, you can react best if you've seen him coming from that porch or driveway.

Proper clothing can help bolster your self-confidence and rightly so. We know of dozens of riders who've actually road raced for thousands of completely accident-free miles only to have an arm or leg or shoulder broken in a five-mile-an-hour accident on the street. The best riding clothing won't prevent a broken leg or arm but leather clothing will prevent the often even more painful burns and abrasions you can get sliding across the blacktop or concrete. If you don't ride with a crash helmet, even at five-miles-an-hour you're a damn fool. Some argue that no crash helmet is going to save your skull if you hit something at 60 but the actual facts are that your head seldom actually hits directly on the road at any speed but, rather, strikes a glancing and sliding blow that is well within the capabilities of the design to absorb. When you buy a helmet, buy the best. Most helmets carry a seal that says they meet the SHCA (Safety Helmet Council of America) Z-90 standard—that's the bare minimum. The ones that are as good as your head *also* carry a sticker that says they meet the Snell Foundation standards. Look for the date of manufacture too, any helmet that is more than two-years

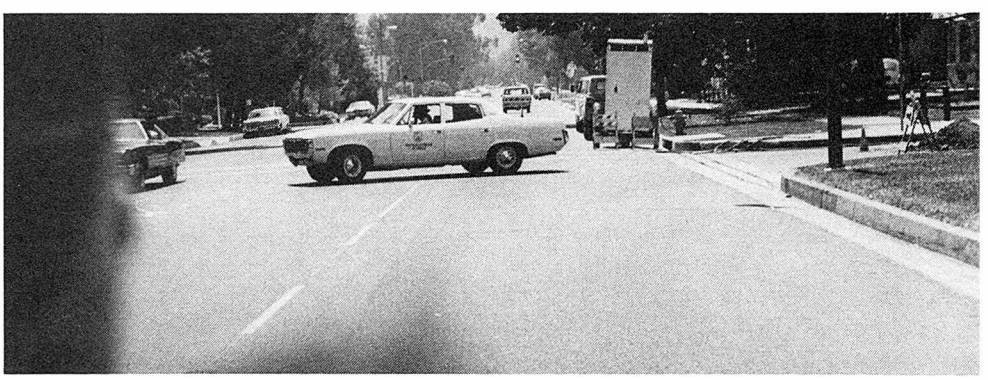


That guy looks placid enough and he's not likely to jump out at you but his kid brother may be lurking in front of the car or he may snap off a hub cap or nut that'll roll right into you.



The road signs can help you spot dangers on an unfamiliar stretch. This turn is followed by a narrowing of the road as indicated by the downward arrow in the distance—watch your mirrors, here!

This rider is taking a big chance because his half-lane of safety is cut down by the station wagon driver looking for a parking place and, worse, the rider is in the ''blind spot'' just out of the wagon's mirror.



Never assume that a driver will clear your path. This guy just stopped in mid-lane (he probably didn't see you or your headlight coming) and is waiting for oncoming traffic to clear—you may not make it around him!

If you assume that the van driver sees the Cadillac ahead but does not *see you, you're closest to the truth. Slow down a bit to give him a better chance to see you and to give yourself some room to maneuver.*

old *may* have started to deteriorate with age and, unfortunately, the only way to tell if the thing is starting to ''rot'' is to break it! You should replace your helmet every two-years if you want to be sure it won't shatter too. Goggles are an absolute must if you expect to be able to see *every* moment you ride. A speck of dust can blur your vision badly enough to upset your delicate equilibirium, at best, or force you to close that eye at the very instant a car decides to turn left in front of you. A misplaced bug can blind you for life. Plastic or vinyl jackets, pants or gloves may be easier to care for and far cheaper than genuine leather but their surface will ball and rub-off down to the inner cloth when most of them are scrapped across the pavement. Leather will wear through too, but it does so at a far more even rate to give you the best possible chance to scrub off some speed without burning or ripping your own hide. Thick-soled boots will protect your feet if you do have to put a foot down at speed and, if they extend above your ankles, they can actually help to prevent a broken or fractured bone. Gloves can give a more positive grip with less fatigue and, of course, they're more comfortable than bare-handed riding. If you feel your body is well-protected your mind can be more at ease and be better prepared to concentrate on the world around you.

Motorcycle Safety Standards By State

These are the current state-by-state motorcycle regulations furnished by the U.S. Department of Transportation, National Highway Traffic Safety Administration.

STATE	Special Driver's License	Safety Helmet	Eye Protection	Passenger Seat	Passenger Footpegs	Rearview Mirror	Headlight in Daytime	Safety Inspection At Time of Reg.	Safety Inspection Periodically
ALABAMA		X		X	X	X			
ALASKA		X	X	X	X	X			
ARIZONA	X	X	X	X	X	X			
ARKANSAS		X	X	X	X	X	X	X	X
CALIFORNIA	X			X	X	X			
COLORADO	X	X	X			X		X	X
CONNECTICUT	X	X	X	X	X	X			
DELAWARE	X	X	X	X	X	X	X		X
FLORIDA		X	X	X	X	X		X	X
GEORGIA		X	X	X	X	X		X	X
HAWAII	X	X	X	X	X	X		X	X
IDAHO		X	X	X	X			X	X
ILLINOIS	X		X	X	X	X	X		
INDIANA		X		X	X		X		X
IOWA	X			X	X	X		X	X
KANSAS		X[4]	X	X	X	X			
KENTUCKY	X	X	X	X	X	X		X	X
LOUISIANA	X	X	X	X	X	X		X	X
MAINE	X	X	X	X	X	X		X	X
MARYLAND	X	X	X	X	X	X			
MASSACHUSETTS	X	X		X	X	X		X	X
MICHIGAN	X	X	X[3]			X			
MINNESOTA	X	X		X	X	X		X	X
MISSISSIPPI						X		X	X
MISSOURI	X	X				X		X	X
MONTANA	X			X	X	X	X		
NEBRASKA	X	X[1]						X	X
NEVADA	X	X		X	X	X			
NEW HAMPSHIRE	X	X	X	X	X	X			
NEW JERSEY	X	X	X	X	X	X		X	X
NEW MEXICO	X	X[2]	X	X	X	X		X	X
NEW YORK	X	X	X	X	X	X	X	X	X
NORTH CAROLINA		X				X		X	X
NORTH DAKOTA	X	X		X	X	X		X	X
OHIO	X	X	X	X	X	X			
OKLAHOMA		X[4]	X	X	X	X		X	X
OREGON	X	X				X	X		
PENNSYLVANIA	X	X	X	X	X			X	X
RHODE ISLAND	X	X	X	X	X	X		X	X
SOUTH CAROLINA	X	X	X	X	X	X		X	X
SOUTH DAKOTA	X	X		X	X	X		X	X
TENNESSEE	X	X	X	X	X	X			
TEXAS	X	X		X		X			X
UTAH	X	X[5]	X[5]	X	X			X	X
VERMONT	X	X	X	X	X	X		X	X
VIRGINIA	X	X	X	X	X	X		X	X
WASHINGTON	X	X	X[3]	X	X	X			
WEST VIRGINIA		X	X	X	X	X		X	X
WISCONSIN	X	X	X	X	X	X	X		
WYOMING								X	X
DIST. OF COL.	X	X	X	X	X	X		X	X
PUERTO RICO	X	X		X	X	X			

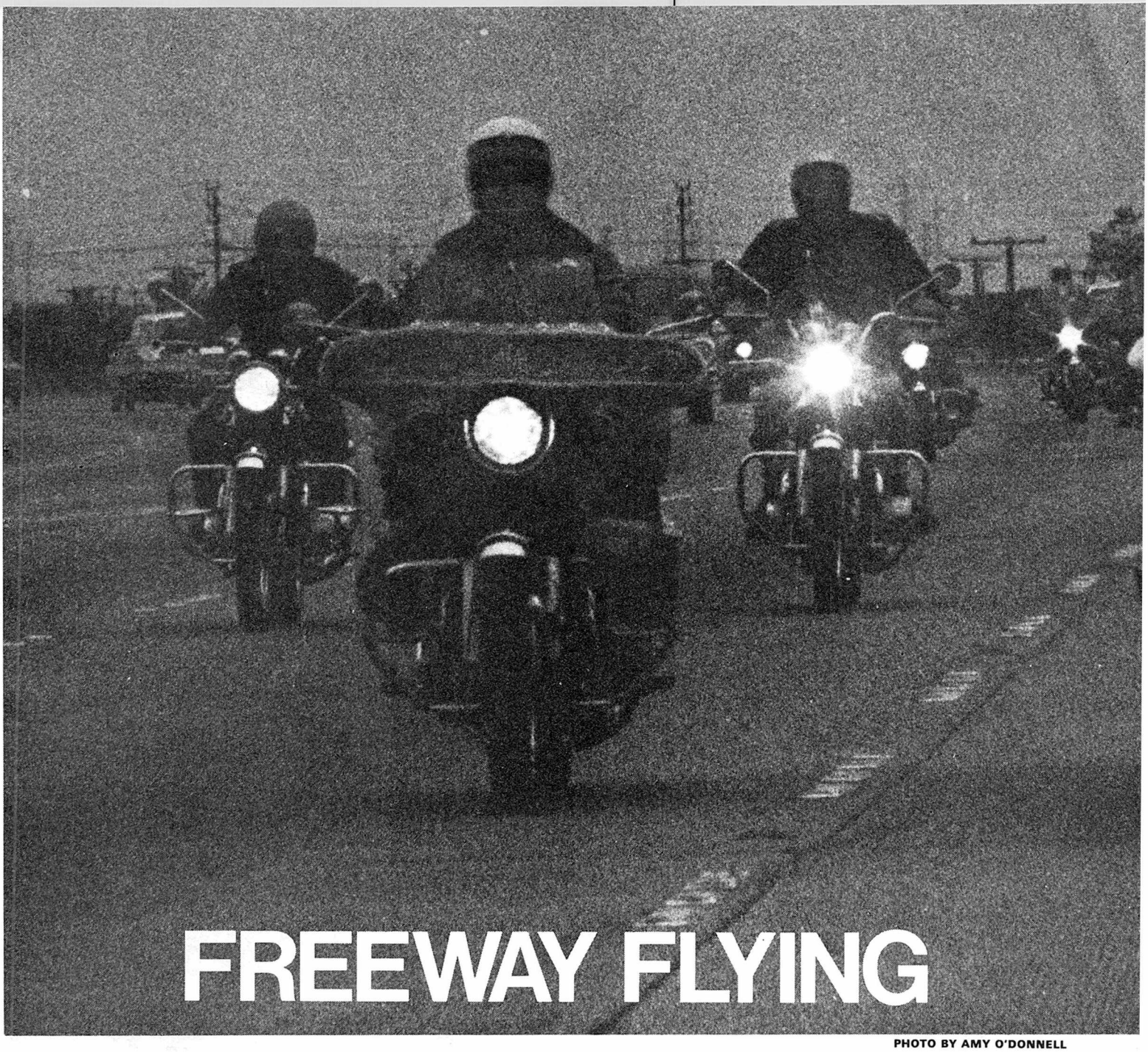
X[1] The helmet law is not currently enforced.

X[2] The law applies to all passengers, but only those operators under 18.

X[3] Required at speeds above 35 mph.

X[4] The law applies only to operators and passengers under 21.

X[5] The law applies only on roads with speed limits higher than 35 mph.



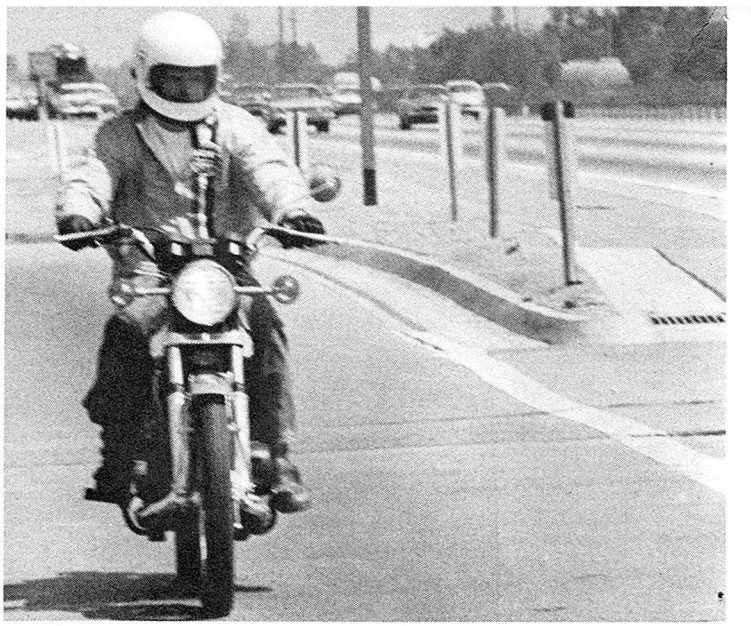
FREEWAY FLYING

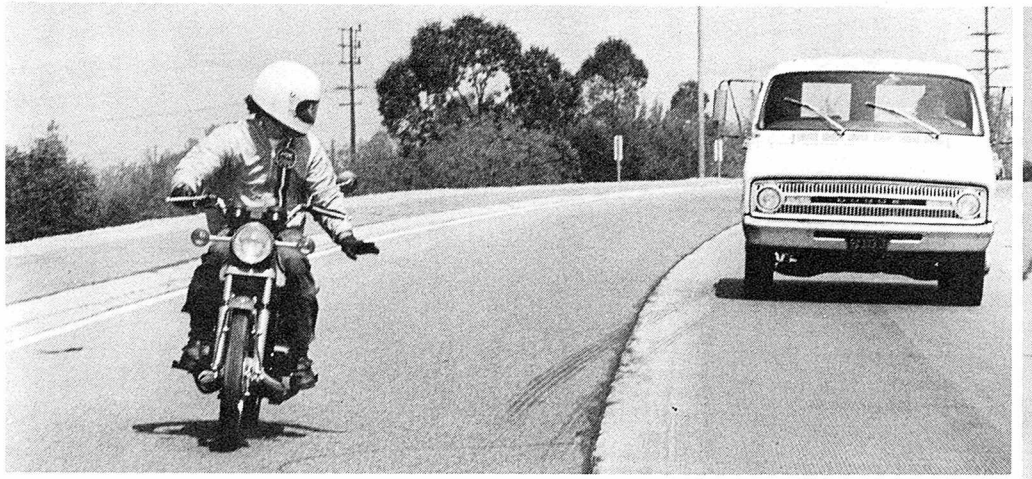
PHOTO BY AMY O'DONNELL

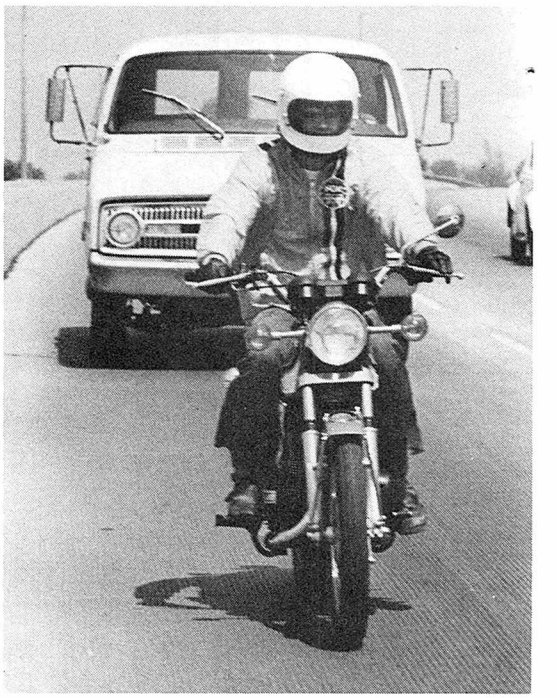
Here are the special techniques you need to know to ride the parkways, turnpikes, interstates and freeways.

In modern America, most of your mileage will likely be rolled off on the four to sixteen-lane divided, "limited access" highways since they're the quickest route between most points. The engineers that design these modern marvels have done everything technology will allow to make them as safe as possible for sustained sixty to seventy mile-an-hour cruising by *car*—your motorcycling pleasure is strictly an afterthought. The same defensive driving rules that apply in the city apply here but, like the speeds, in an exaggerated form. You sit relatively high on a motorcycle with better vision than most of the automobile drivers and that can be both your best asset and your worst fault at one and the same time. It's obvious that you can look further ahead to spot upcoming traffic and accidents. That clear field of vision, though, can lull you into a false sense of security. You may feel you have acres of room ahead of you and to the sides but the slightest change in the flow of traffic can suddenly surround you with skidding cars—the general open look of the interstate-type of wide roadway is deceiving for that "accident" can come upon you just as quickly as a kid darting out from a traffic-filled street in terms of the milli-seconds you have to react to the danger. You'll want to leave a minimum of 50-feet between you and the next car at twenty but that distance should multiply to at least two-feet for every mile an hour you're traveling to leave *at least* 120-feet and preferably twice that much between you and the next car in front of you. If cars keep cutting in front of you to halve that distance then slow down to let it build up again with an ever-watchful eye on your rear view mirror.

If you're going to cruise along with traffic stay in one of the two fastest

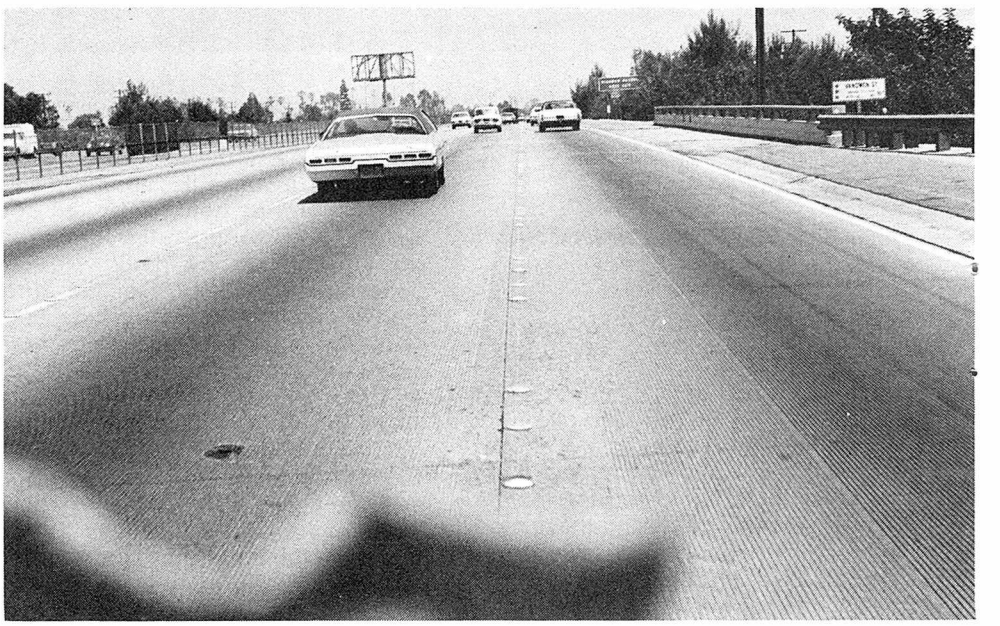






If you want to really learn to ride then discipline yourself to be your own critic. This rider spent a bit too much time, for example, riding in the oil-dribbled center of the on-ramp lane. The hand signal, in this instance, is wasted motion—where else could he go? He started to get things right by switching to the far left of the on-ramp lane but he should have slowed and tucked in behind that van.

Leave yourself as much of a safety zone between your motorcycle and the other vehicles. Stay in one wheel path or the other; never in the darkened-from-oil center of the lane. This rider has a clear ''safety'' lane on the right and a half-lane on the left worth of room.



lanes. You'll eventually want to ''split traffic'' by riding between the two lanes of cars and those two center lanes are the relatively-safest place to pull off that dangerous maneuver. One of your ''freedoms'' as a motorcyclist is your ability to move through tight traffic but you pay a price in terms of increased danger. There are ways to minimize it, in addition to splitting between the two fastest lanes, but face the fact that you cut down your odds every time you try

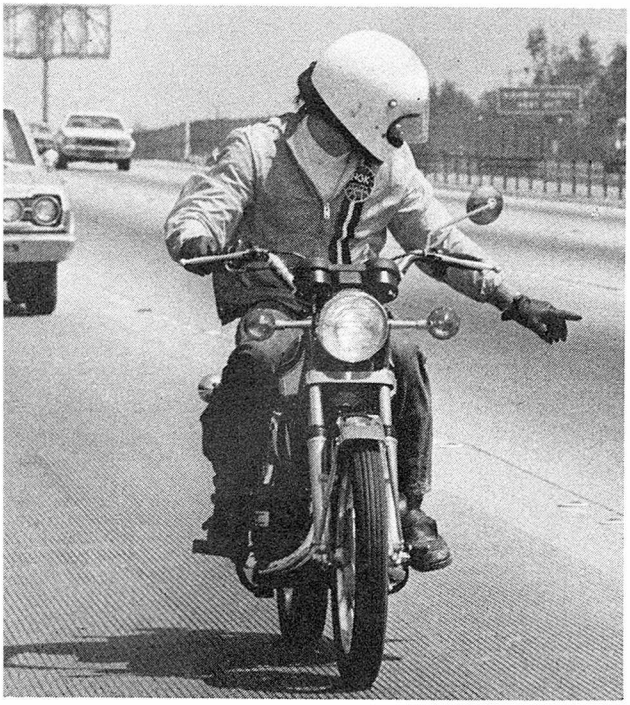
Rain grooves will set up a slight wobble in most motorcycles but you can usually just sit back and let the machine self-correct. Try tightening or loosening the steering dampener knob, if you have one, to see if it has any effect on your stability then set it and leave it alone.

Your rear view mirrors should be adjusted so you don't have to turn your head to see what's directly behind you. Try to allow two *car lengths for every ten miles an hour both in front of you* and *to the rear. If the guy behind insists on tailgating you then change lanes.*

You'd better be ready for a lot of drivers that either don't see you or just plain don't care because your machine is smaller than theirs. Give the oncoming guy as much room as you can by riding in the left hand side of the lane. The two fastest lanes are usually the safest.

it. Try to time your car-passing so that you pass the cars when they're side-by-side rather than staggered. There's a chance the drivers of either car might swerve toward one another to squeeze you in between but it's far more likely that each will see the other *automobile* (you're invisible, remember!) and keep a distance that's wide enough for you to pass between. If, for example, the car you're passing on your right is a bit ahead of the front bumper of the car on your left the lead car may try to change lanes right beside or in front of you. By passing cars that are side-by-side you're effectively using those two driver's ''margin of safety'' as a shield to ride through as you pass between them. Rule three for splitting traffic is to keep your speed down to a maximum of ten-miles-an-hour more (and, preferably closer to a five-mile-an-hour difference) then *either* lane of traffic. Spend as little time as you possibly can in the ''blind spots'' to the left and right rear quarters of the cars you're passing.

The most dangerous part of riding on limited-access highways is getting on and off of them. Most motorcycles have enough power to allow you to accelerate up to match the speed of the slow lane traffic you're joining—be sure you do it every time you enter. Stay in the right hand tire tracks on the on-ramps until your speed is up to give you that extra few feet of a side-to-side safety margin and watch

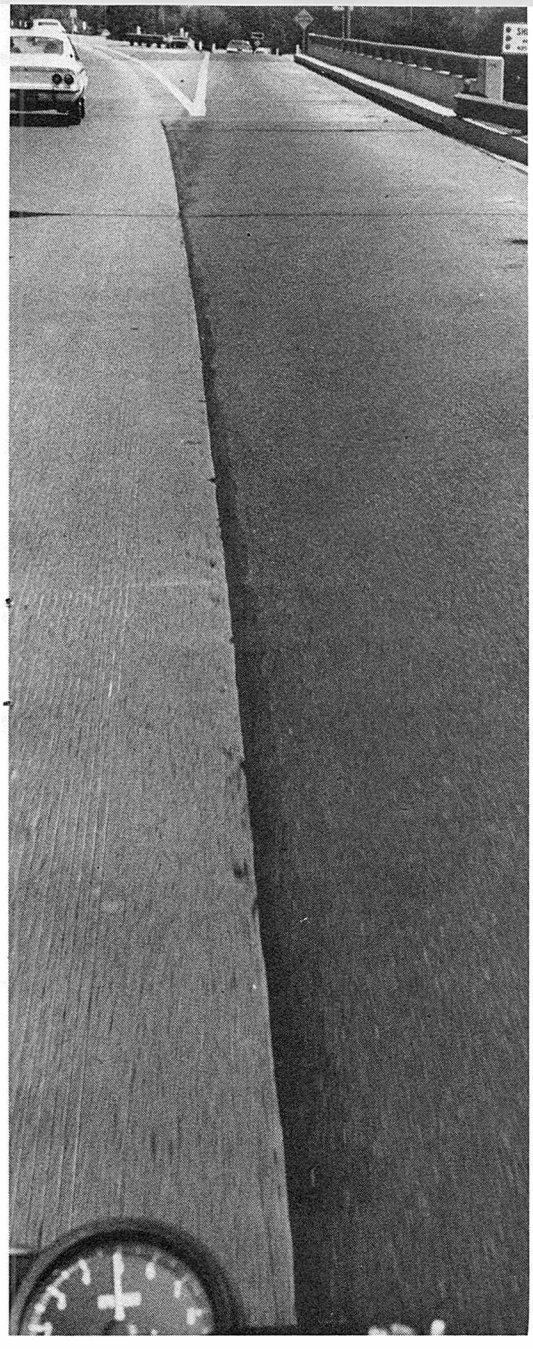


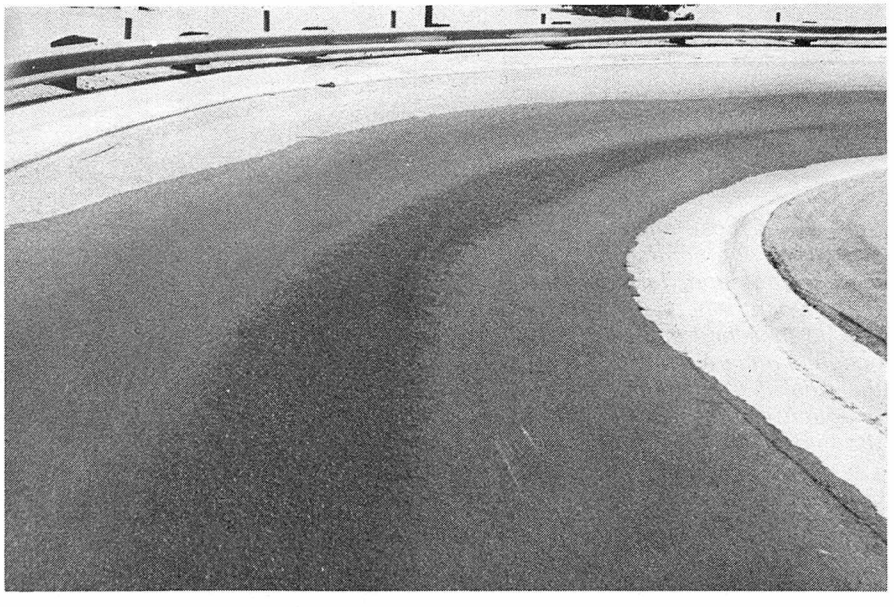
If the guy behind is tailgating, signal your intention of changing lanes by both hand and blinkers and, with an ever-watchful eye on your rearview mirror, get over. You're usually better off if you change all the way over to the right side of the lane to give him extra room.

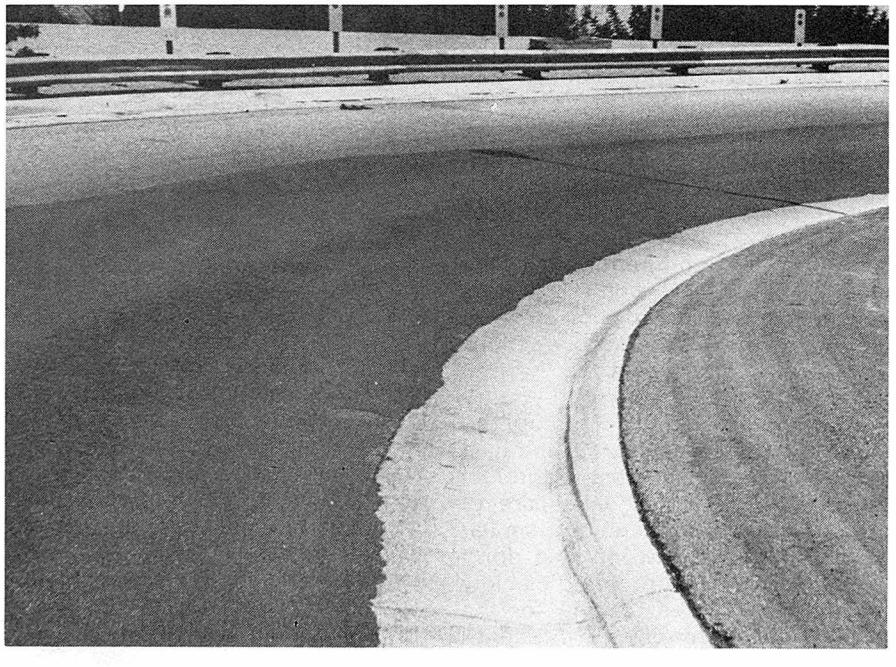
that center-of-the-lane area particularly on the on and off-ramps because that's one of the favorite oil-dumping grounds for automobiles. There's two schools of thought on how to ride those broad-radius turns that lead on and off of most limited-access highways. California Highway Patrol officer and rider school instructor Larry Sturges prefers to stay toward the far outside of these curves to avoid the oil and water spillage that flows down the banked surface toward the inside. Riding the outside also gives him a slightly better field of view on around the ''blind'' turns. You have to remember, though, to change back over to the right side of the lane on on-ramps to maintain that side-to-side ''safety barrier.'' Other officers feel that this ''riding the guard rail'' technique uses up too much of the road so that you have no place to go if you enter the turn too fast. Officer Sturges counters with the thought that you should have better judgement of your cornering capabilities than to find yourself in a corner with too much speed to make it on the line *you* pick.

The squiggly, wavy, grooves that

Riding groups are great when the riders have some respect for other traffic. If you're riding with a large group, say twenty or more, split the rows up into sections of six or less and spread your six-pack groups out a quarter-mile or so to allow traffic a chance to work its way through the long line of riders without tailgating any of you.





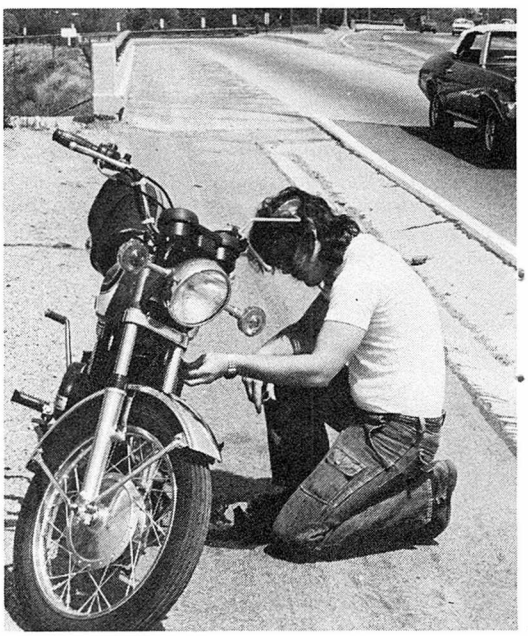


Getting off the limited-access highways can be as dangerous as getting on. Get over in the slow lane a good half-mile before your exit. When you're about a quarter-mile away swing into the right side of the slow lane. Move off the highway and well onto the off-ramp so the drivers behind you know you're exiting. Be sure to brake a little early so you're not applying much brake when you cross the painted lines and letters—they might be oil or water-wetted and ice-slick. Keep to the outside of the corner to avoid the rubble and water that accumulates on the inside (downslope side) of the banking. Look as far around the curve as you can for possible pot holes, water, or stalled traffic.

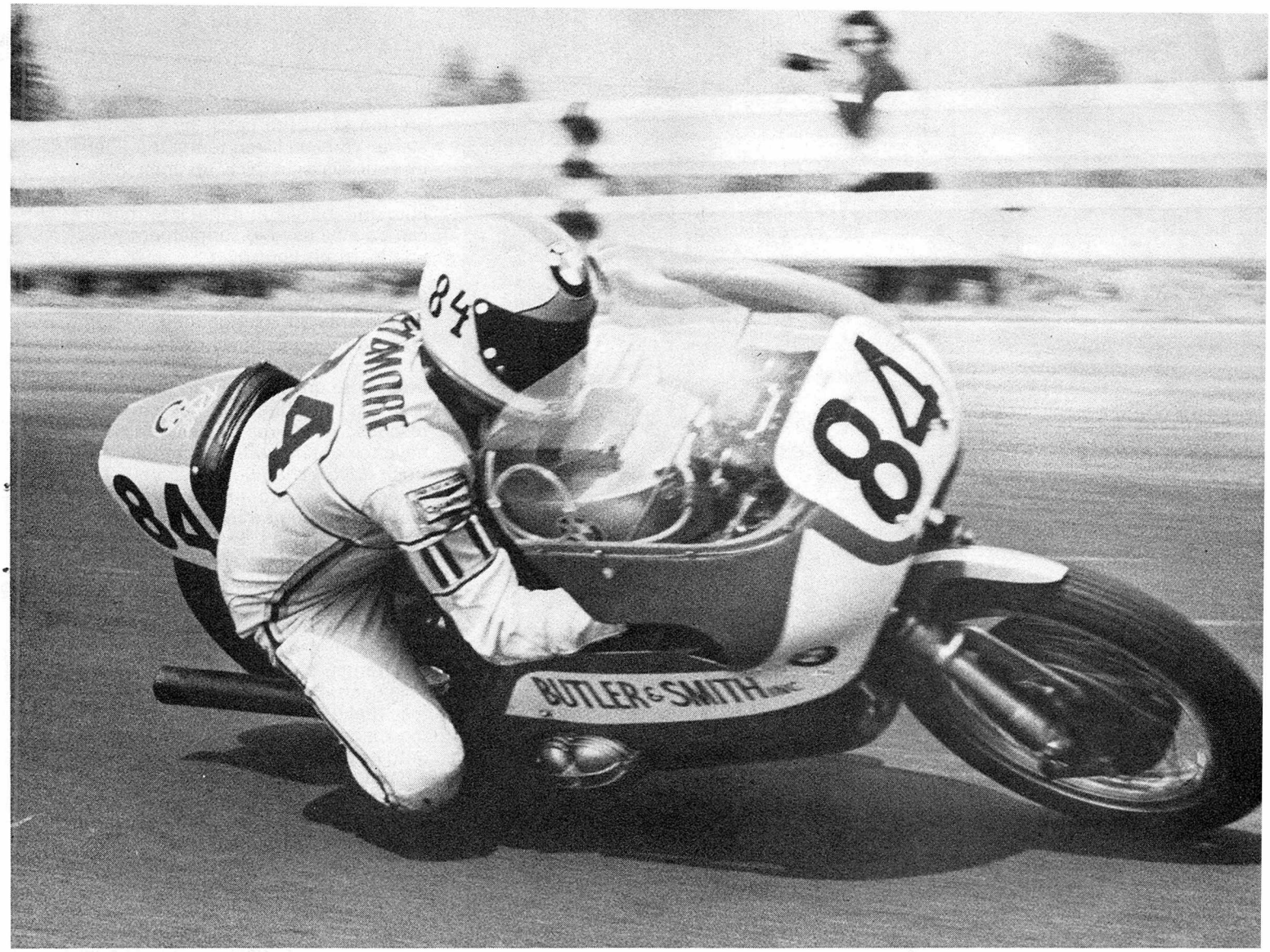
Stay off of those arrows. For one thing they're smoother than the road surface and, for another, they're right where the cars will dribble their high-speed accumulations of hot oil. Stay to the side of the lane in the direction you're going to turn at the end of the off-ramp.

are cut into modern concrete highways will often cause your front wheel to wander and hunt a bit from side to side. Your best bet, here, is to learn to sit back and enjoy it while the machine automatically corrects itself with its inherit gyroscopic stability. Trying to correct for that wobble will usually just result in an over-correction that, in turn, can lead to what's fearfully referred to as a ''tank slapper'' when the forks swing back and forth so far they try to hit both sides of the tank. Tank-slappers don't last long before they get so bad they spit you right over the bars—the correction? slow down by rolling off the throttle. If the rain grooves really bug you try tightening down just a bit on the steering dampener knob but the best correction is just to adjust to the fact that the machine will take care of itself. A flat tire can create a similar type of high-speed wobble so don't let yourself get caught riding placidly along on a flat tire waiting for the machine to self-correct. . . . Standard

If you do have mechanical trouble pull well off the highway to allow yourself room to kneel on either side of the bike while you check it out. Try to avoid stopping, as this rider did, on the apron of an on-ramp where traffic can 'force' oncoming cars over toward you—the drivers are watching for traffic, not *looking for you by the road.*



practice for flats is a gentle application of the brake on the good wheel—leave the flat's brake alone—and a shift of your weight forward on the seat for a rear flat and to the rear for a flat front tire. Hold onto the bars for dear life but try to avoid any actual steering corrections except to gently ''bend'' the machine through the lane changes necessary to get you off the road as quickly as traffic will allow.



RIDING A ROAD RACE

Racing is much like road riding without* any *margin for error.

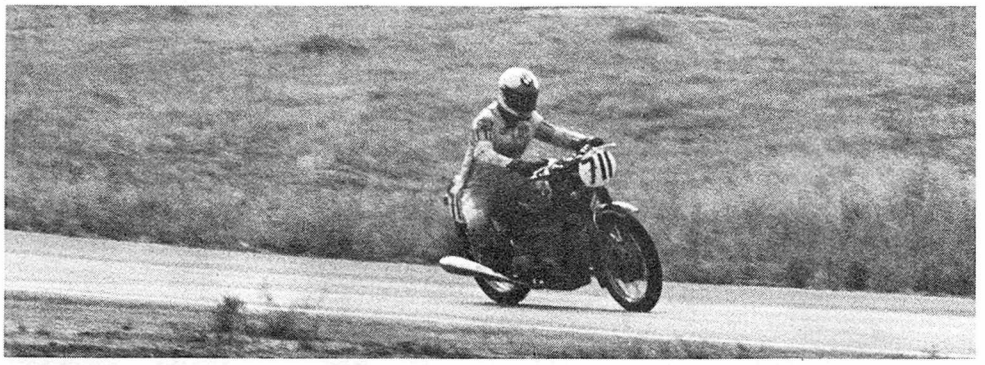
If you really dig leaning through the corners and playing songs with the shift and throttle and brakes while you ride you may just be a candidate for road racing. The sport is finally beginning to catch on in this country after decades of hundred-thousand strong crowds in Europe and England with crowds of 30,000 and more turning out for the big races at Daytona, Loudon, Pocono, Ontario and the like. Most of the motorcycle factories that produce big-bore road machines participate with specially-chassised motorcycles fitted with very much modified production engines. These ''Grand Prix'' bikes, though, are something for the expert. The newcomer can race his street machine, with only minor modifications, in hundreds of ''production'' motorcycle races at tracks all around the country. We talked to one of the most successful racers, Reg Pridmore, who rides (of all things) a BMW with a marked degree of success in highly competitive Southern California races. We picked Reg as an expert for two reasons: first, he wins with consistency (*and* without crashing in the process) and, second, his BMW motorcycle is usually considered to be more of a touring machine than a road racer. If his techniques will work on a BMW, they should work at least equally well on most any machine.

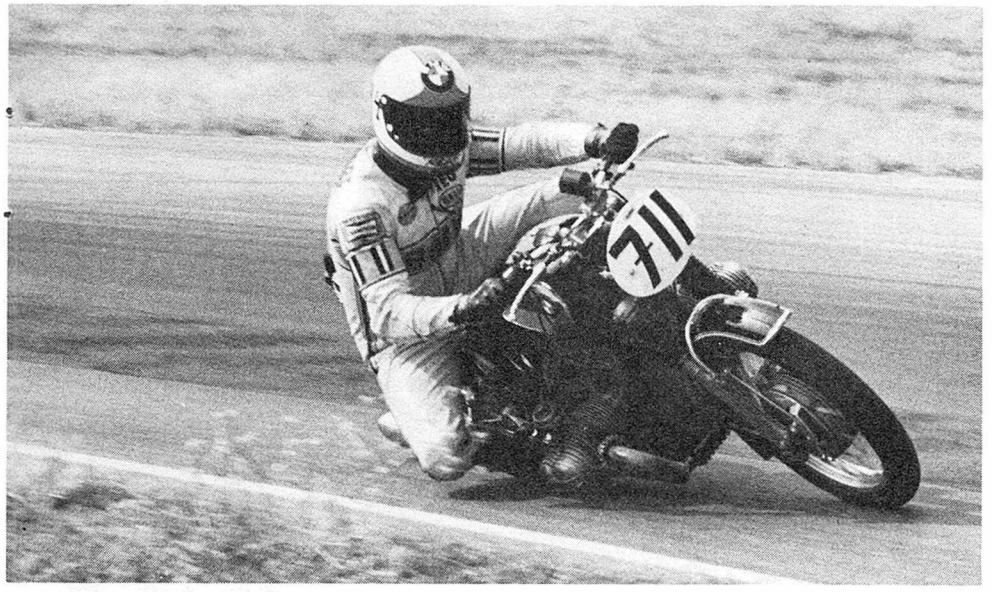
Reg Pridmore is English by birth but, since 1965, he's very much an American with a comfortable home and a fine BMW and Norton shop in the college/retirement coastal town of Santa Barbara, California, called RPM Motors (for *R*eg *P*ridmore *M*otorcycles). He started racing in English club races with a 350cc AJS 7R and moved on to a 500cc T100C Triumph. He started racing in local AFM and ACA races in California in 1965 but lost a year after a bad body-breaking accident at the old Cotati track. His BMW was very much an underdog when he competed in the AMA races at tracks like Daytona, Laguna Seca and Talladega because the competition was using highly-modified engines and special road racing frames while his BeeEm was virtually stock. He learned a lot, though, and managed a 15th overall at Talladega. In 1973 he's sorting out a new ''Grand Prix'' BMW with engine and frame modifications that are closer to the competition.

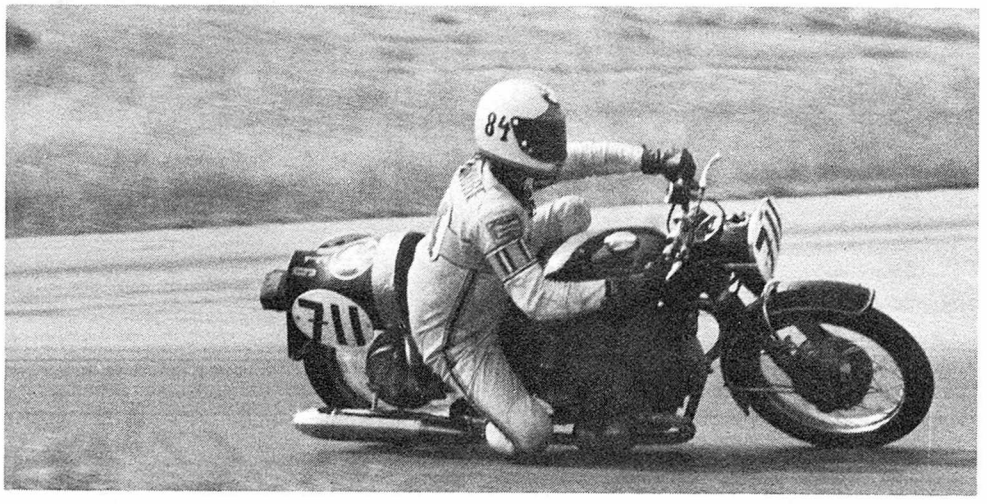
The western BMW distributors are preparing and tuning a single ''production'' road racer and a highly-modified ''Grand Prix''-class version for Reg Pridmore to ride. He's been successful with the stock machine against the Japanese and British super-bikes on what most feel is a roadster.

You *can* race a completely stock machine and that's a good enough place to start learning. Eventually, though, you'll want to make most of the modifications mentioned in the Production vs. Cafe Racer chapter. It's far more important, according to Reg, for the beginner to learn slowly and gradually for *at least* a year. Road racing is one sport that involves a delicate and precise balance with little warning other than a leather-burning skid or worse when that balance is overdone. Nothing but time and experience will teach you where the ''balance'' point between the fastest cornering or quickest braking and disaster lies. This is a very individual-oriented sport too, one that forces the lone rider to learn *his* own limits of braking and cornering and those of his machine. You just can't follow the experts around, even if they have a machine identical to yours, and hope to keep up without crashing—the movements and balance are too subtle to catch by watching alone. You *can* listen to the top riders in your class to pick up their ideas on gearing, braking points, cornering lines and the like, but that information can only be used to supplement what you learn on your own.

Learning to road race is much like learning to ride except that all of your movements are exaggerated, in their effect on the machine, by the higher speeds. You can, however, concentrate more on the business of controlling the machine and learning it's response to the road when you don't have to contend with automobile and truck drivers that won't see you. The outer limits of tire adhesion, though, make racing something more than just rapid road riding. Pridmore and his peers use the front brake to do 75 percent or more of their stopping. Every application is hard, just short of literally clamping down on the lever, with a perceptional chirp from the front tire as it fights for traction. The gearbox is used more than the rear brake pedal to slow that end of the machine and to get the machine onto its peak power area to accelerate out of the corner. You likely won't need to double-clutch to downshift like you would in an automobile, but you will have to use the clutch to ease the screaming engine into the next lower gear. Your upshifts will tell you (just as they do in quick country road riding) the best power range for the engine in each gear. If the engine drops 2000 rpm when you upshift from third to forth then you'll have to slow the machine 2000 rpm with the front brake and a bit of rear brake until the engine slows—for example, from 7000 rpm in forth to 5000 rpm before you can pop the clutch and gear lever in and out to shift down to third for an upcoming corner. Again, as on the road, you should learn the feel of such severe and sudden braking and downshifting on the straights with the bike upright before attempting such maneuvers while leaned over in a corner. Some of the corners have decreasing radius turns that will require just that ability to downshift and brake with the machine leaned over near the limit. Where that ''near'' limit is only comes with practice on your machine, at one particular track, on one particular day. With experience you can apply these specialized lessons to any track on any day. The ability to accelerate and upshift while the machine is leaned over will come with the practice of feeling the machine's response to throttle *just* before the rear tire breaks traction. The road rider, even if he's foolish

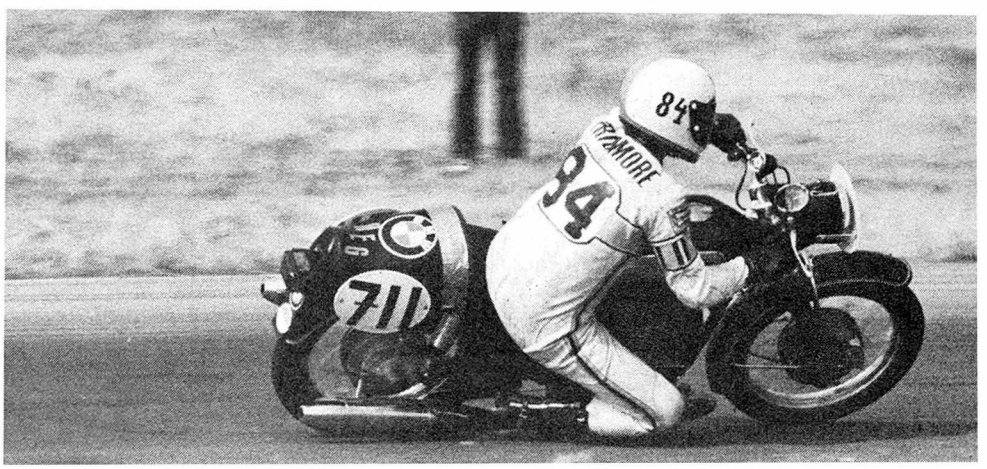






enough to play-race on public roads, can never learn one road well enough to be able to safely brake and downshift while fully banked over. That combination of techniques and the ability to execute nearly full power-on upshifts in an increasing radius corner are things that can only be accomplished on a closed track where you can try the same corner dozens of times in practice and during the races.

The road racing motorcyclist must contend with the vagaries of the road surface to an even greater extent than the road rider. A road racing automobile can pick a line through a corner that will give him the quickest exit to the following straight. A motorcycle racer, however, must usually stick to the smoothest and best-worn line, the one that will offer the least amount of suspension movement. With the machine leaned over until the mufflers or pegs are almost scraping just doesn't have the margin of movement that a bottoming suspension would give—the reduced ground clearance would quickly lower the muffler or pedal so it would rub and, in turn, lift the rear tire to send the rider and machine sliding and skidding across the road. The whole secret of road racing (or safe street riding for that matter) is smoothness. Any too-sudden movement of the throttle or brake or your body can let the machine lean that fraction of a degree that will let something ground to lift the rear tire and off you go. . . . Your machine should really be fitted with the low clip-on or butterfly style handlebars with rear-mounted footpegs and foot controls so you can spend the entire race with your belly on the tank to keep the center of gravity as low as possible. These modifications alone will let your machine corner a bit quicker and make it more responsive to shifts in body weight at the leaned-over limits. If you're just racing to learn to ride better you'd best stick with the stock bars, pegs and foot pedal locations so you don't get any handling surprises when you convert

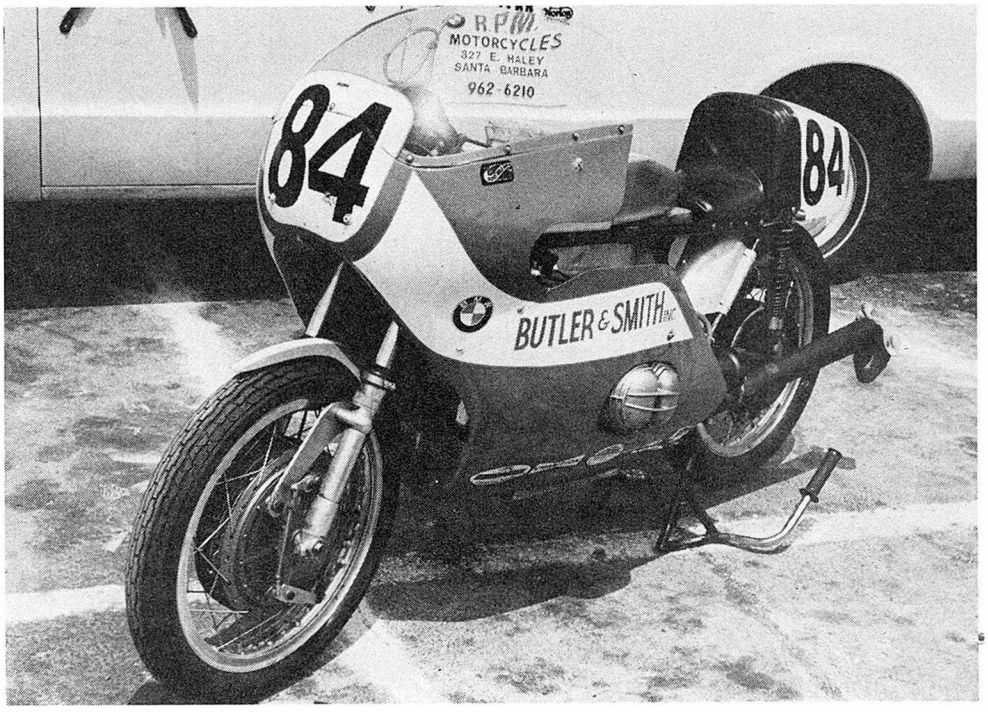


The ground clearance on virtually all production motorcycles is so low that the riders must try to hold them upright through the corners so the exhaust pipes and footpegs don't drag. Here, Reg Pridmore begins to climb off to the inside of the machine as it enters the corner. As the corner tightens he leans further inward to lever the machine upright. He uses his knee to gauge when the machine is leaned over too far!

Only a few of the expert road racers in the country are adept enough to climb halfway off their machines through a 90-mile-an-hour corner. The technique helps to offset the machine's natural centrifugal forces so that it can remain upright. The tires will maintain traction at higher speeds than the machine is capable of going with its "normal" amount of lean. Reg has one finger ready on the clutch lever!

your machine back to street trim.

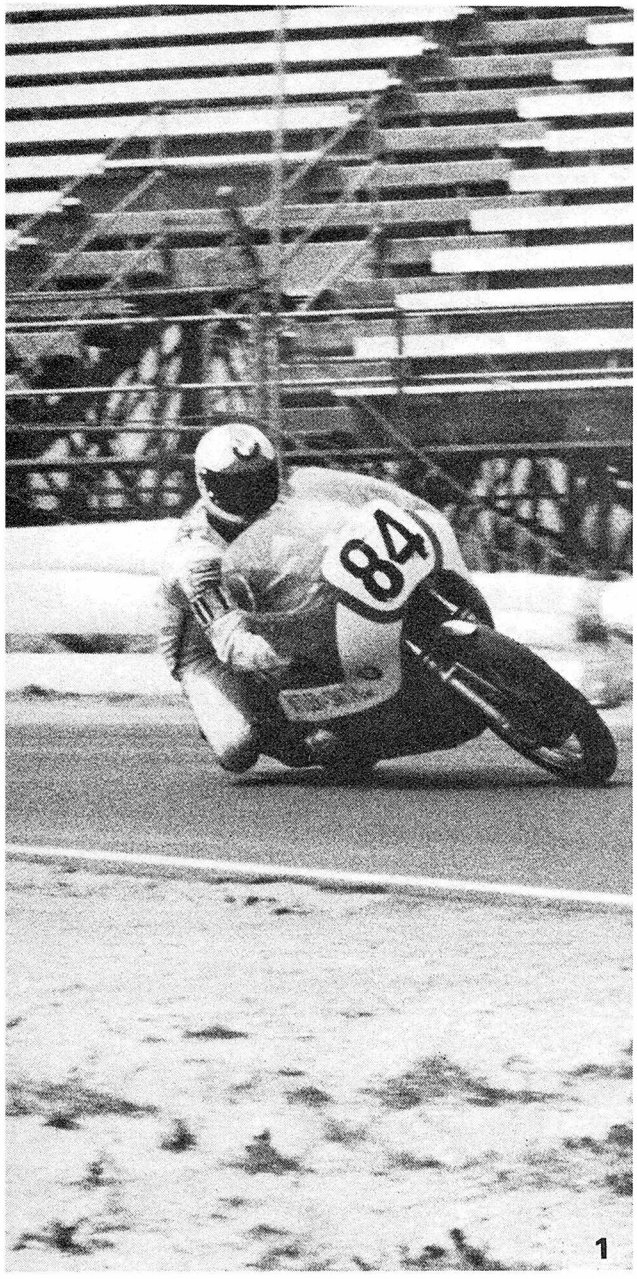
You need to be a real expert at handling your machine in the corners to even attempt the cornering stance that Reg Pridmore and his competitors use. Reg actually holds his machine upright in the turns by climbing up on the saddle toward the *inside* of the turn. The mufflers and pegs and (in the BMW's case) the cylinders are low enough to be too far within the tires' traction capabilities—another way of saying that the machine would corner at a faster speed IF it could be leaned over further without something dragging the inside of the turn. The tires are sticky enough to allow Reg and his competitors to hold the machine more upright than it's centrifugal force wants to let it without losing traction. Since any muffler or footpeg or cylinder drag would send the machine and rider flying across the track, Reg holds his *knee* out to the inside of the turn as a lean gauge. If he feels the road skimming his knee, he knows that the machine is leaned to its limit and that he had better try to hold it more upright *or* slack off a bit on the throttle! If you think it was hard to



The AMA road racing rules allow the use of modified frames, forks, shocks and brakes. BMW tried to compete against the modified road racers with a stock machine but it just wasn't quick enough. Now they're developing this for-real racer that should thrill every BMW owner. Reg Pridmore will ride it at the major American road races.

adjust to leaning *with* the machine, imagine how much more unnatural it must feel to actually climb halfway off the motorcycle toward the inside of the turn *and* to try to push against the machine's natural tendency to lean through the corner. There are only a few that can do it and Reg Pridmore is one of them. . . . Race for at least a year and know that you're good enough before you even think about matching his style; you can win a roomful of trophies without going that far.

One of the advantages of using special frames for racing is that the rider can be positioned more comfortably and lower. Pridmore is nearly kneeling on the Grand Prix BMW 750cc racing machine.



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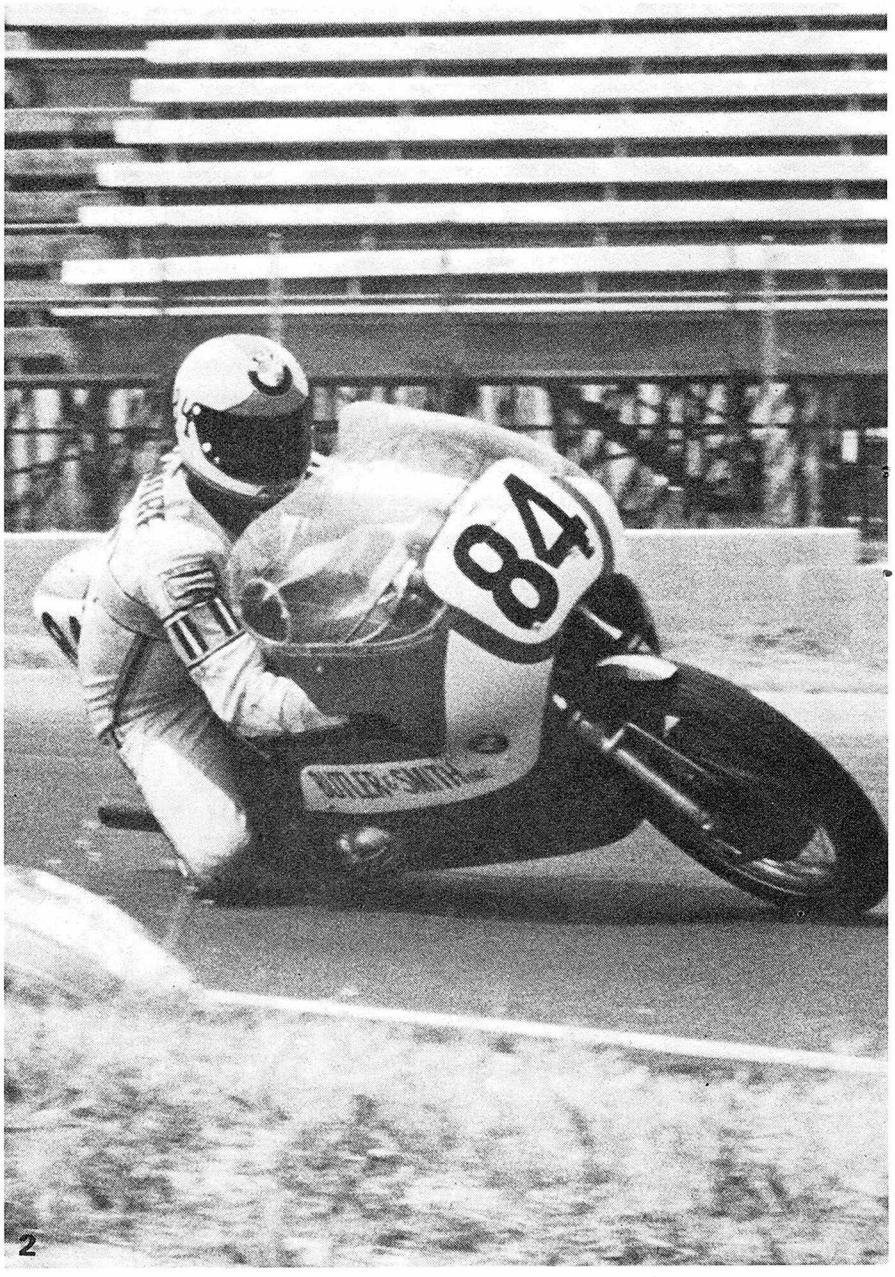

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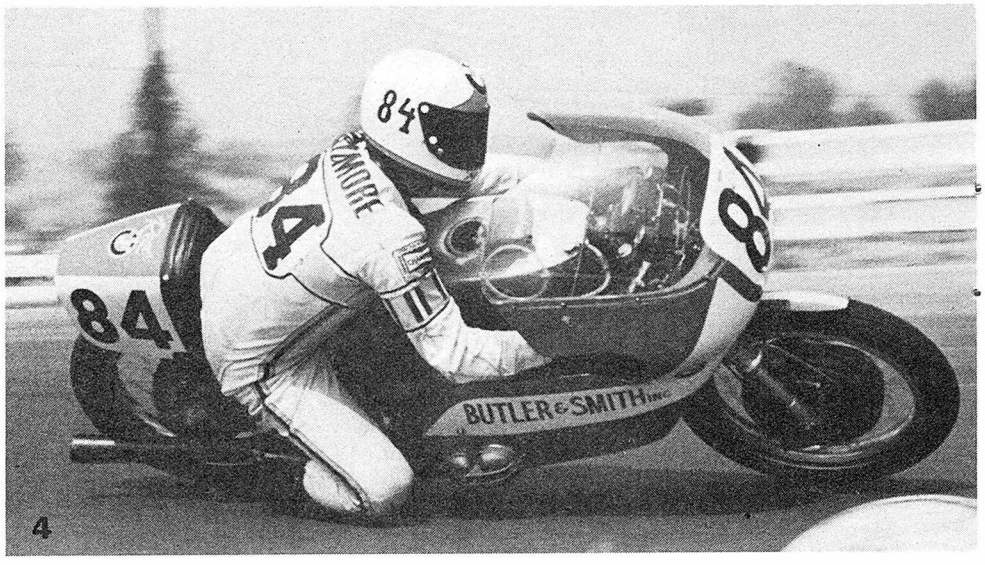
The second half of turn six at Riverside International Raceway is smooth enough to allow Pridmore to use most of the road to make the corner as constant a radius as he can. Notice how he starts through in the middle of the road, skims by the inside edge and drifts on out toward the guard rail as he begins to straighten up and shift up through the gears for the upcoming straightaway.



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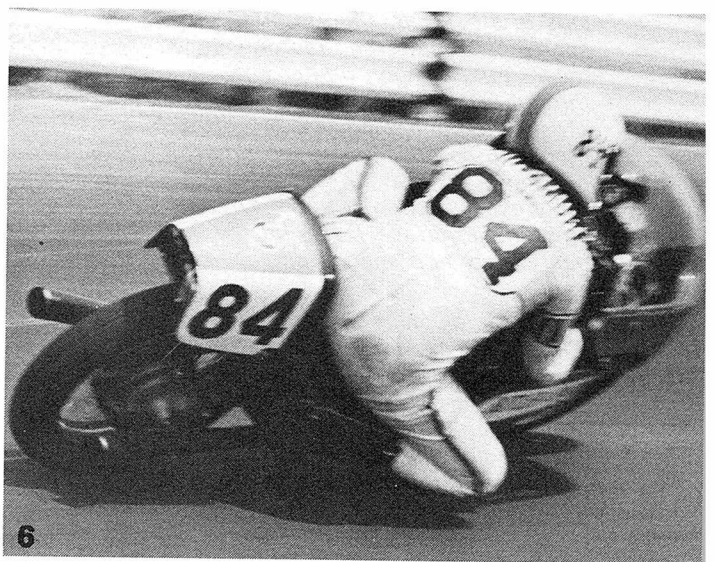

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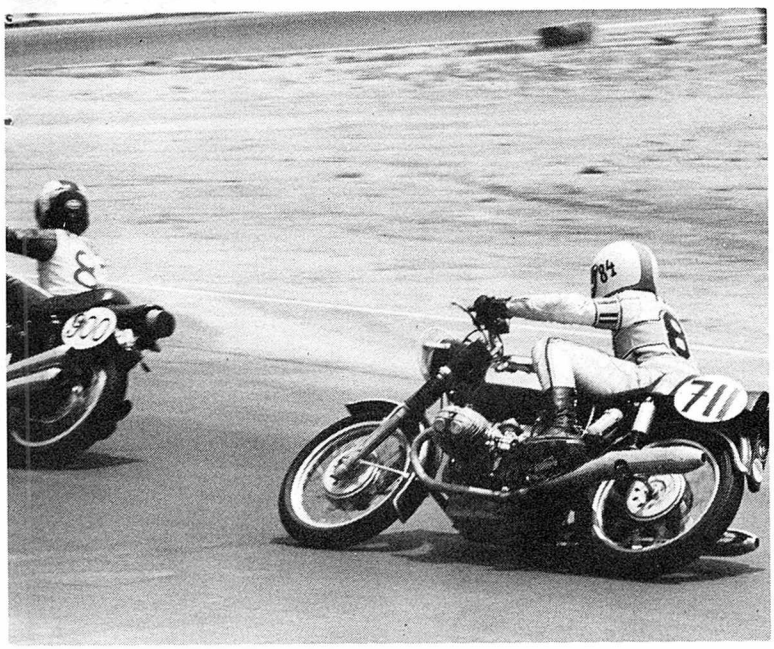
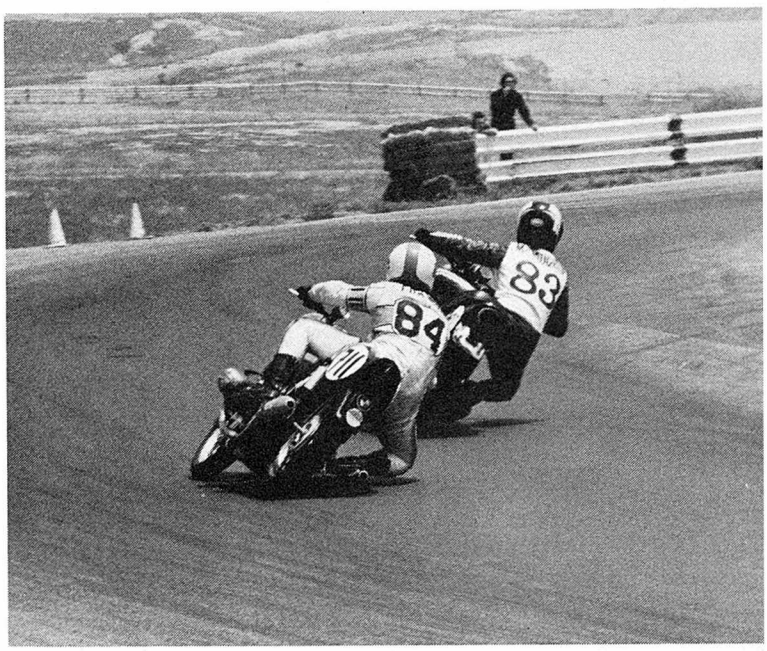
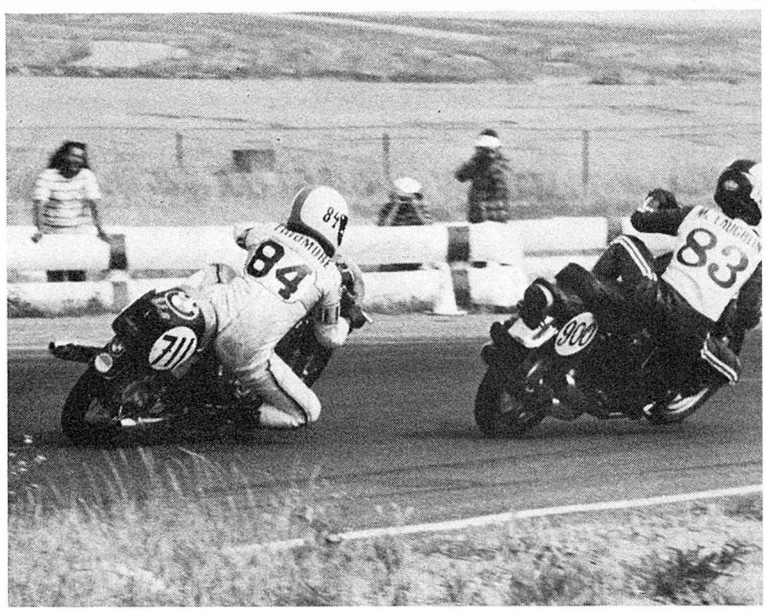
The black tire marks through Riverside's turns 7 and 7A have been left there by thousands of laps of stock car, CanAm and sports car racing. The motorcycle racers take a much tighter line through 7A in the background. Most automobiles can square off a corner to produce faster lap times, but the quick way around for a motorcycle is usually the smoothest surface first, and the near-verge as a second choice.

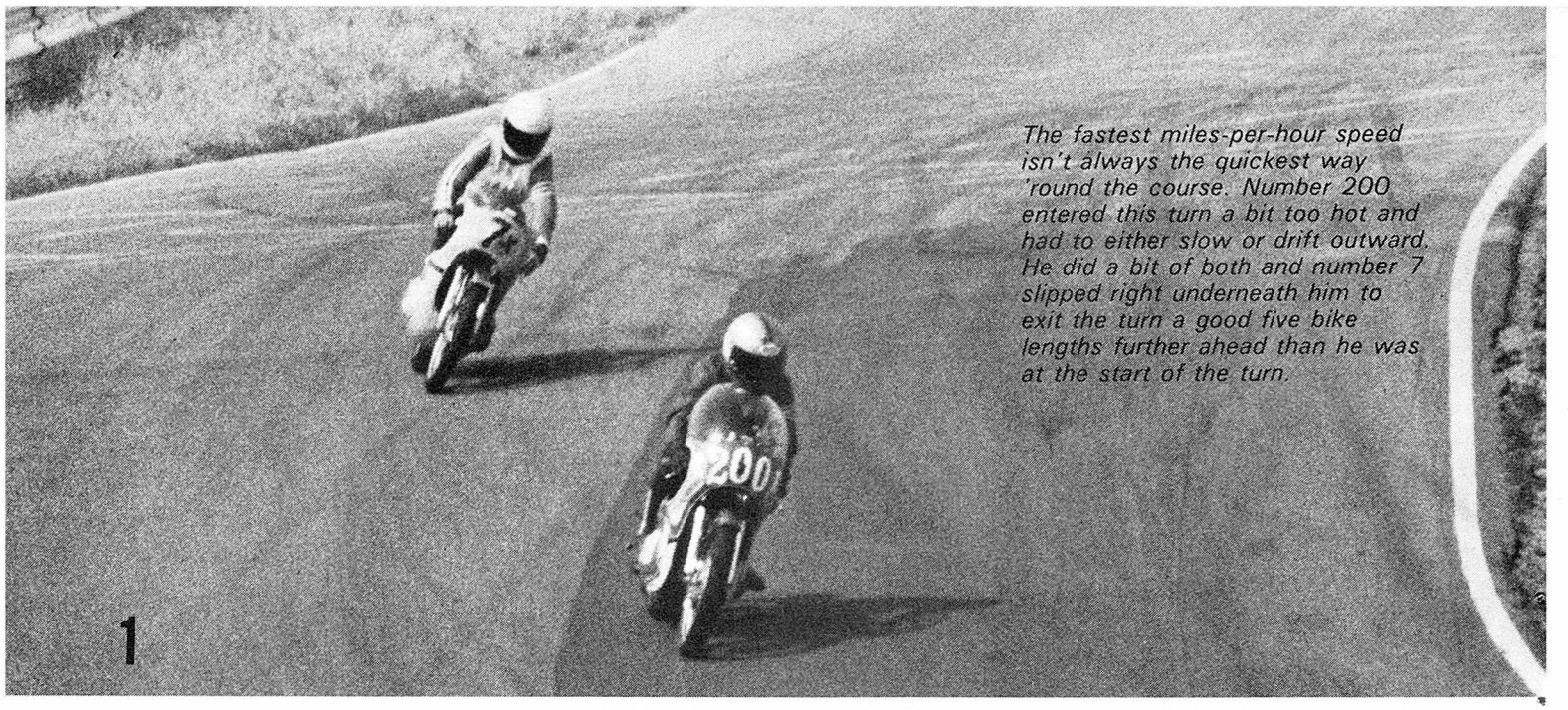
Steve McLaughlin is one of Reg Pridmore's main competitors aboard his 900cc Z-1 Kawasaki. The two riders and machines seem to be evenly matched in every respect and their racing duels are worth seeing as the epitome of what club racing can offer.







Pridmore and McLaughlin both use the man-in-machine-out cornering technique to get the last ounce of cornering speed from their basically stock machines. One lap will find Pridmore in the lead and the next will find McLaughlin there, but the distance between the two is seldom much more than a bike length. The BMW seems to be able to corner just a bit quicker but the Kaw is a hair faster down the straights.



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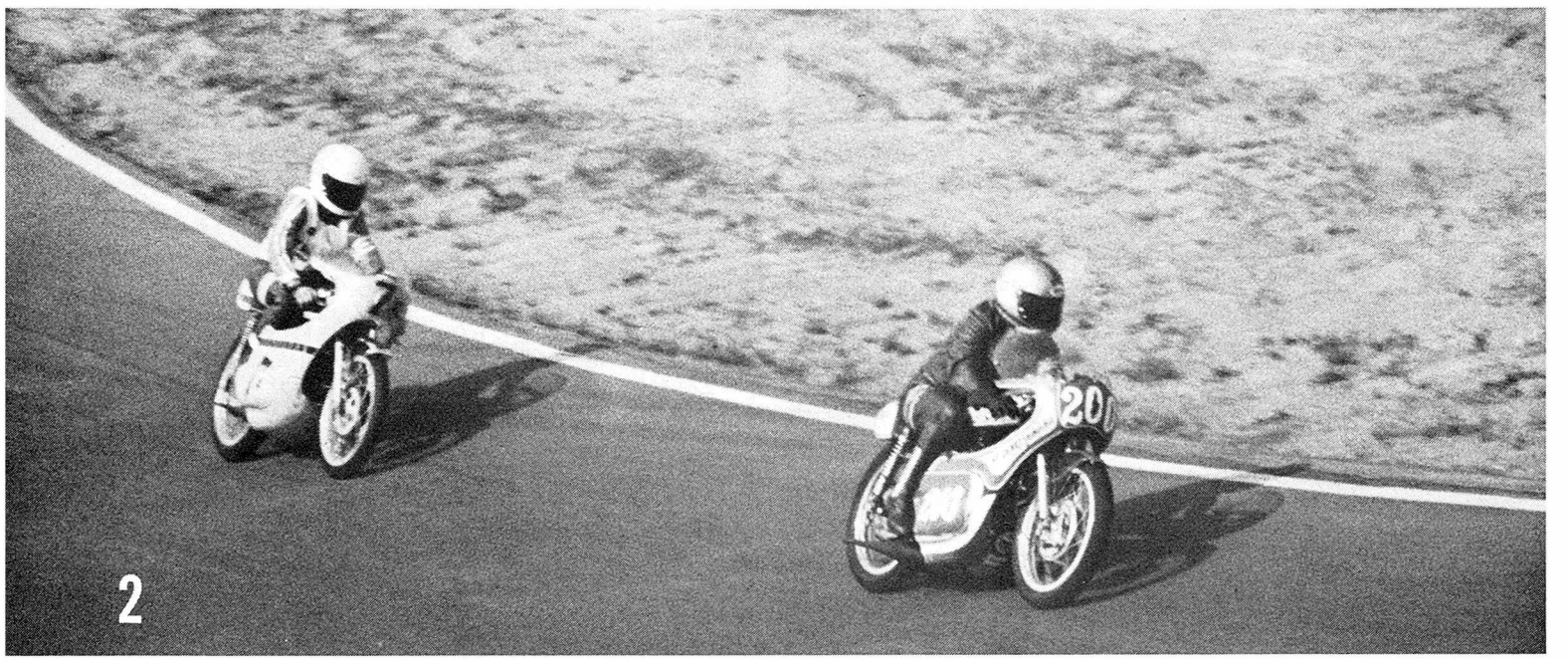
The fastest miles-per-hour speed isn't always the quickest way 'round the course. Number 200 entered this turn a bit too hot and had to either slow or drift outward. He did a bit of both and number 7 slipped right underneath him to exit the turn a good five bike lengths further ahead than he was at the start of the turn.



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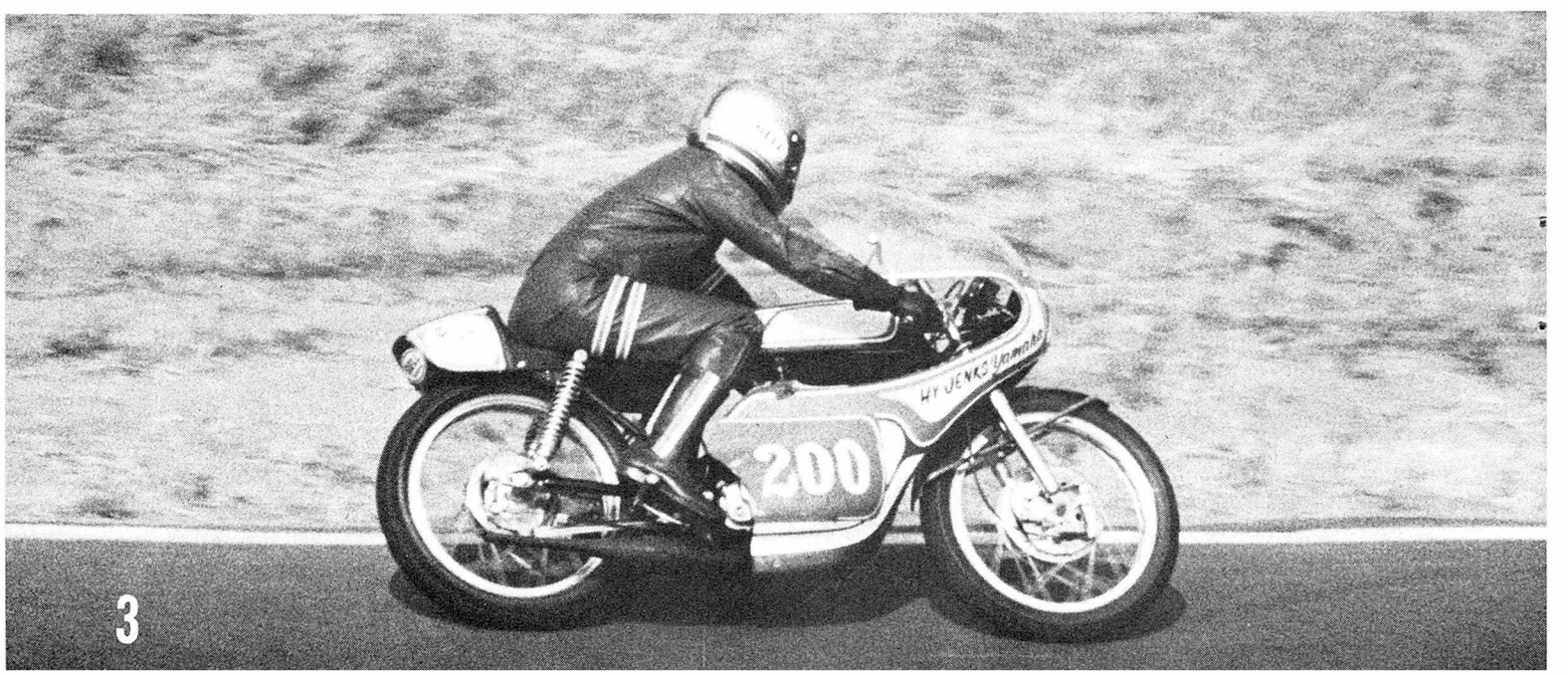

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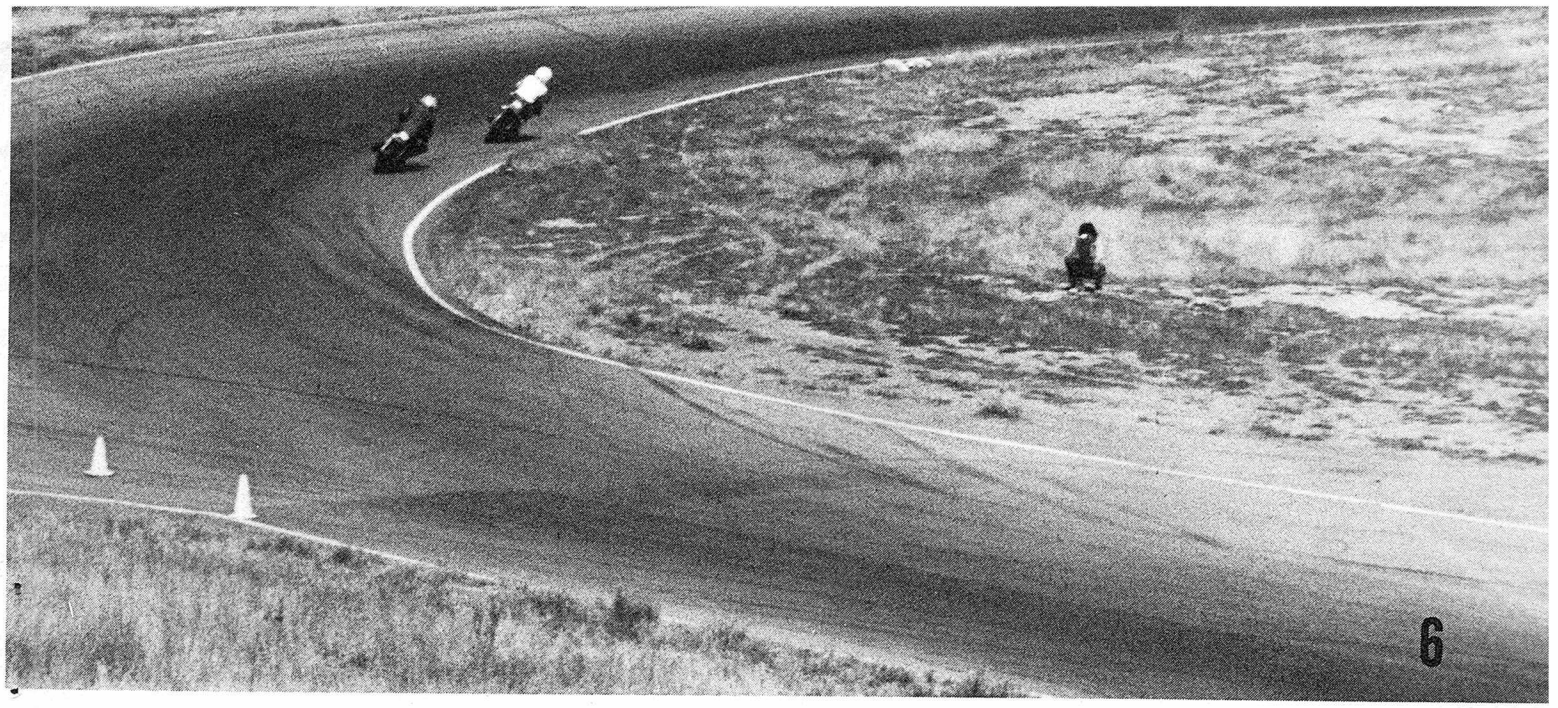
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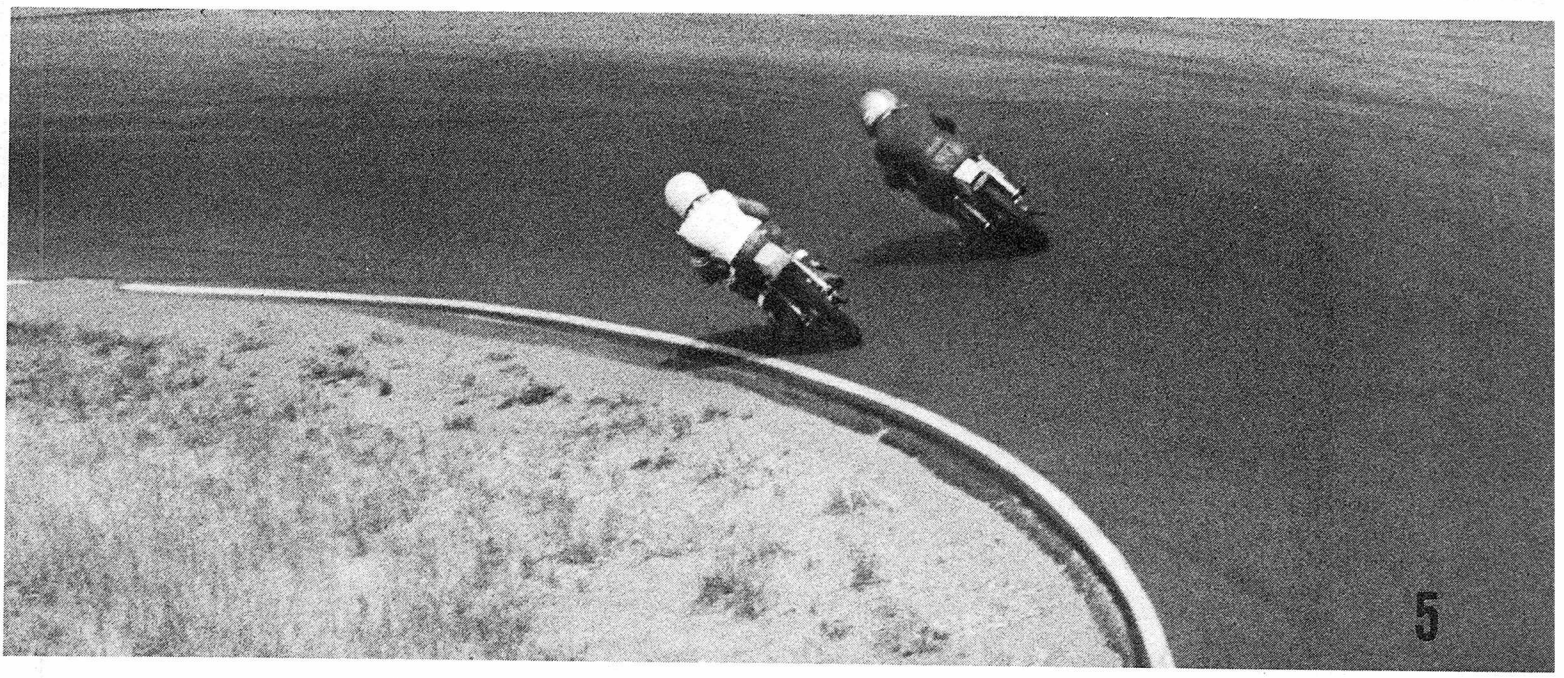
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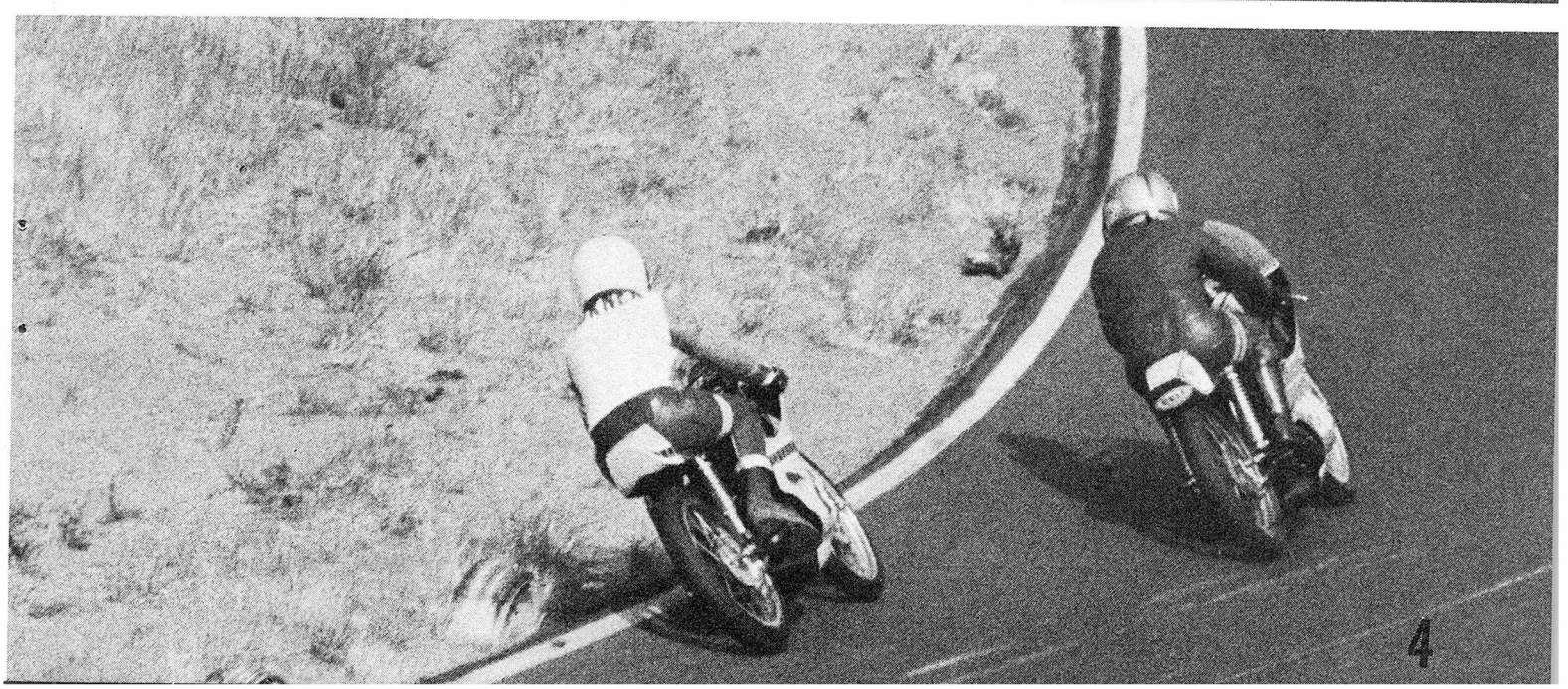
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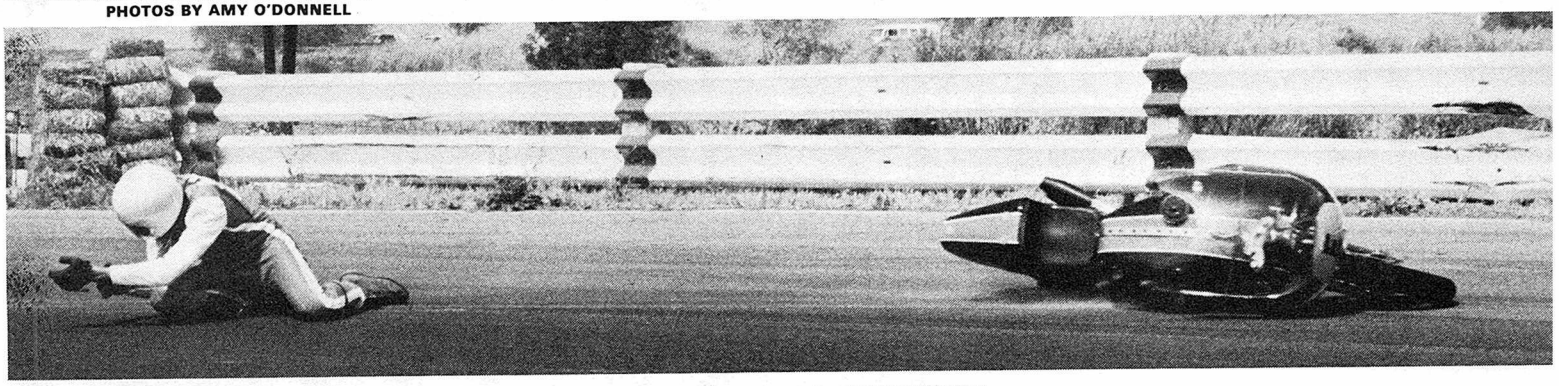
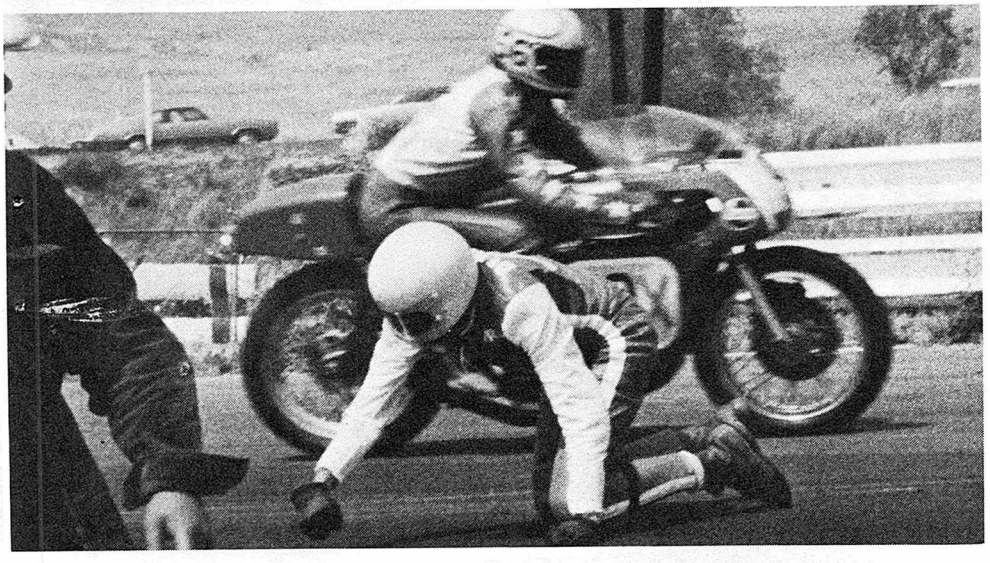
The Pridmore / McLaughlin pair usually manage to start lapping the slower riders within seven to ten laps. A few of the more foolish ones actually try to emulate these two pros before they slide off a bit wiser. Road racing is something you have to learn on your own!

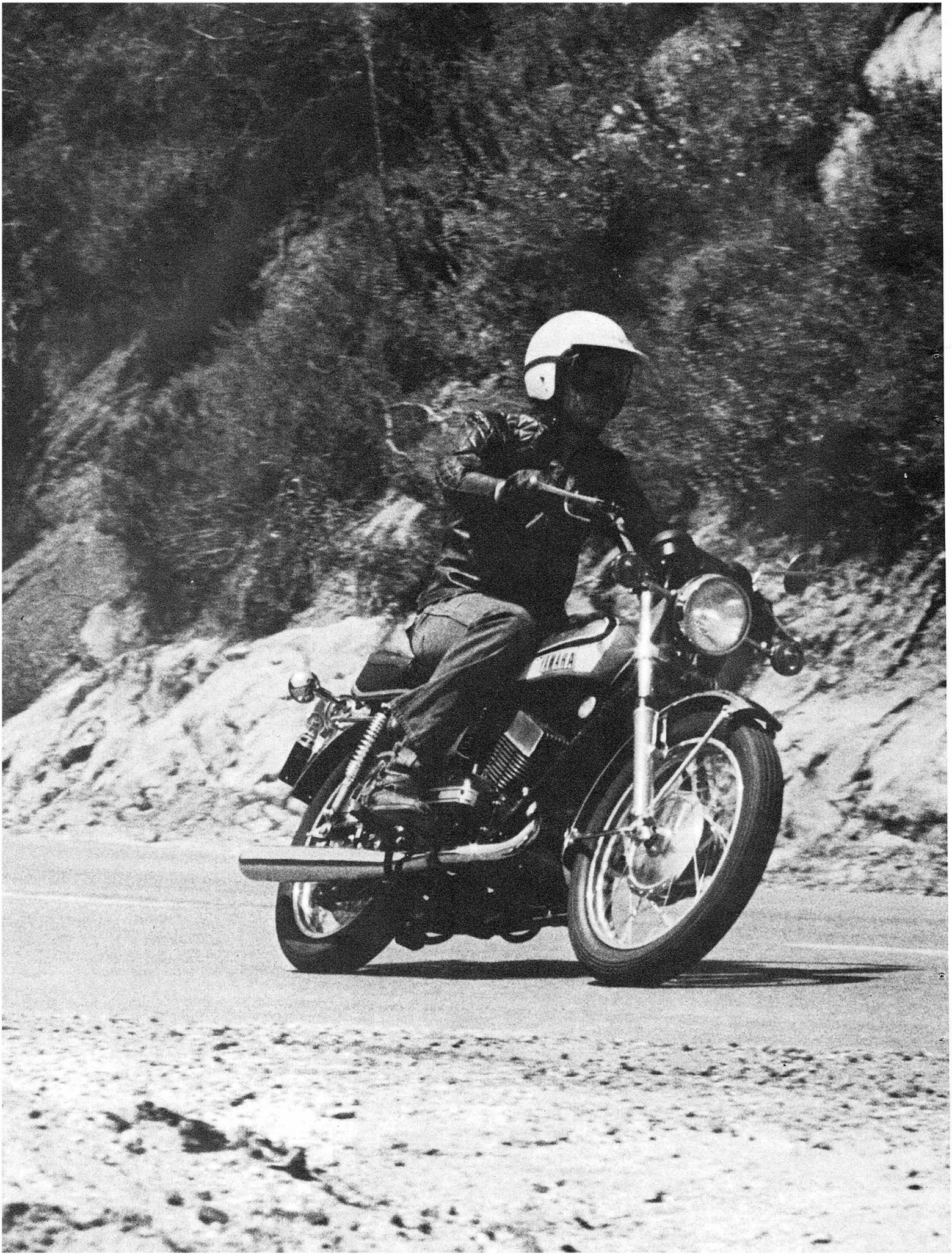
If you hit the turn too hard and forget that the machine wants to be banked over you'll end up paddling frantically toward the crash fence like his rider—he eventually clotted the fence but he'd rolled down to less than five miles an hour. A road racing course is NOT the place to learn the basics *of road riding.*

PHOTOS BY AMY O'DONNELL





Leaning the machine too far over can ground-out one of the exhaust pipes or footrests to lift the front tire off the ground. When that happens the machine wisks out from under you in less time than it takes to think about it. The rider may be lucky enough, as this one was to come out with nothing more than a few scrapes and a scare.



CRUSIN' THE COUNTRY

A motorcycle may be handy around town but "home" is any winding country byway.

Few of us are fortunate enough to live in the country. We spend most of our two-wheeled hours fighting the odds of the city and the expressway just waiting to get away from it all to find our "very own" road. When you've fully mastered the art of leaning and banking the machine that personal stretch of road will likely be more curved than straight; a place to let your mount stretch out and perform closer to the limits of its design than city streets or eight lanes of traffic will allow. The country road is the place to learn to love motorcycling; the path that allows you to shift and accelerate and corner and cruise with little of the worry-about-being-invisible that is one with sharing the streets and highways with too many others. At last, you'll have the chance to put all of your riding techniques together into a harmony that comes with total mastery of the machine and the roads it was designed to conquer so effortlessly. A place, if you will, to put on the Walter Mitty charade of playing the part of a road racer and, if the road is twisting and tight enough, you can do it all well within the law so that even that worry can be set aside for a while. Country roads mean freedom to most of us and it won't take you many miles to find out why. . . .

The country road is the perfect place to perfect the coordination between downshifting and braking that lets you use every last ounce of a motorcycle's control capabilities. We've already discussed the fine points of applying as much front brake as you can short of actually skidding the front tire and enough rear brake to let it add it's bit at dissipating speed. Now, try to get the downshifting thing together. It's far easier to learn to downshift if your machine has a tachometer, if not then you'll have to learn to do it all by listening to the exhaust note. In time, you won't even need the tachometer because you'll be upshifting and downshifting by the feel you get through the bars and the seat of your pants—that tach will help you to learn what the feelings should be. Pay attention to your tachometer

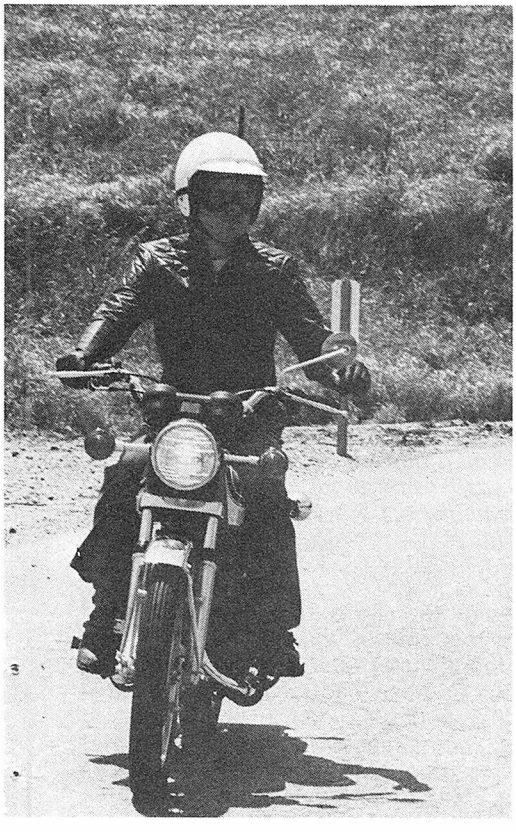
The pleasant part of country road riding is that, with the exception of a few passing cars and an occasional animal, the road is all yours. The safety tips from the city, like lights-on, still apply however.

You can usually use the full width of your side of the road in the country; diving toward the center dividing line as you combine braking, downshifting and banking, then accelerating, uprighting the machine and upshifting as you pull out and toward the outside of your lane.

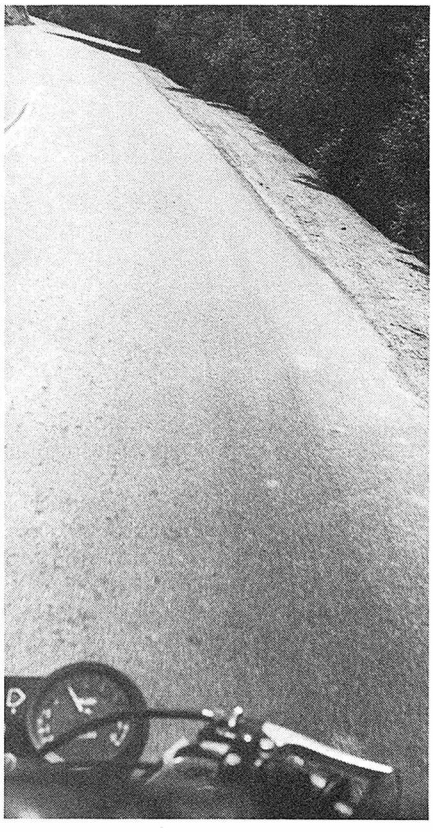
as you shift from second to third, from third to forth and from forth to fifth. Note the way the revolutions drop as you shift upward and note exactly how many rpms are lost by the upshift. That is the same number of rpm you'll gain when you downshift! If, for example, you wind the machine out until the power begins to fall off (or until the tach reaches the "redline"—recommended maximum rpm, depending on which speed gives the most power) in second and you find that's 6500 rpm. Then, in our strictly hypothetical example, you shift up to third and find that the tach instantly drops to 4300 rpm. You've discovered that the difference in rpm between second and third is about 2200 rpm (6500 minus 4300). When you're braking and *de*celerating from a flat-out run in third you'll be able to downshift to second when the tachometer shows that the rpm in third has dropped to 4300 rpm or *less.* If you do pop that downshift at exactly 4300 rpm in third you should find the tach zipping instantly up to near 6500 rpm as the clutch bites in to engage second gear. With most engines and gearing the same rpm spread will apply to the up and downshift between third and forth because that's generally the optimum area of the engine's power spread. You may find a few hundred rpm difference between third and forth, as compared to between second and third, though, so you'd best check it out so you don't accidentally over-rev the engine on a forth-to-third downshift. Keep practicing your upshifts and downshifts on the straighter sections of "your" country road until you have them down pat then combine the downshifts with the smoothest and quickest front/rear-balanced brake applications you can develop.

Now that you've learned to slow the machine to it's limits you can begin to explore some more of the limits of higher cornering speeds. If you're riding a lightweight machine (say a 250cc or smaller roadster) you can probably get all the lean you want just by forcing it a bit with your body. The larger and heavier machines, however, may actually require that you steer a bit to the *outside* of the corner at speeds above 20 mph to start the proper amount of lean. When the machine is actually set for the corner that steering is corrected, oh-so-

Now you'll have a chance to put the feeling for leaning that you practiced in the parking lot to some real use. The humps and bumps of a real road will work the suspension up and down to vary



Your city-developed roving eye must work in the country too to watch for animals and cars at the sides of the road, upcoming traffic in the rear view mirror and changes in road surface ahead of you.

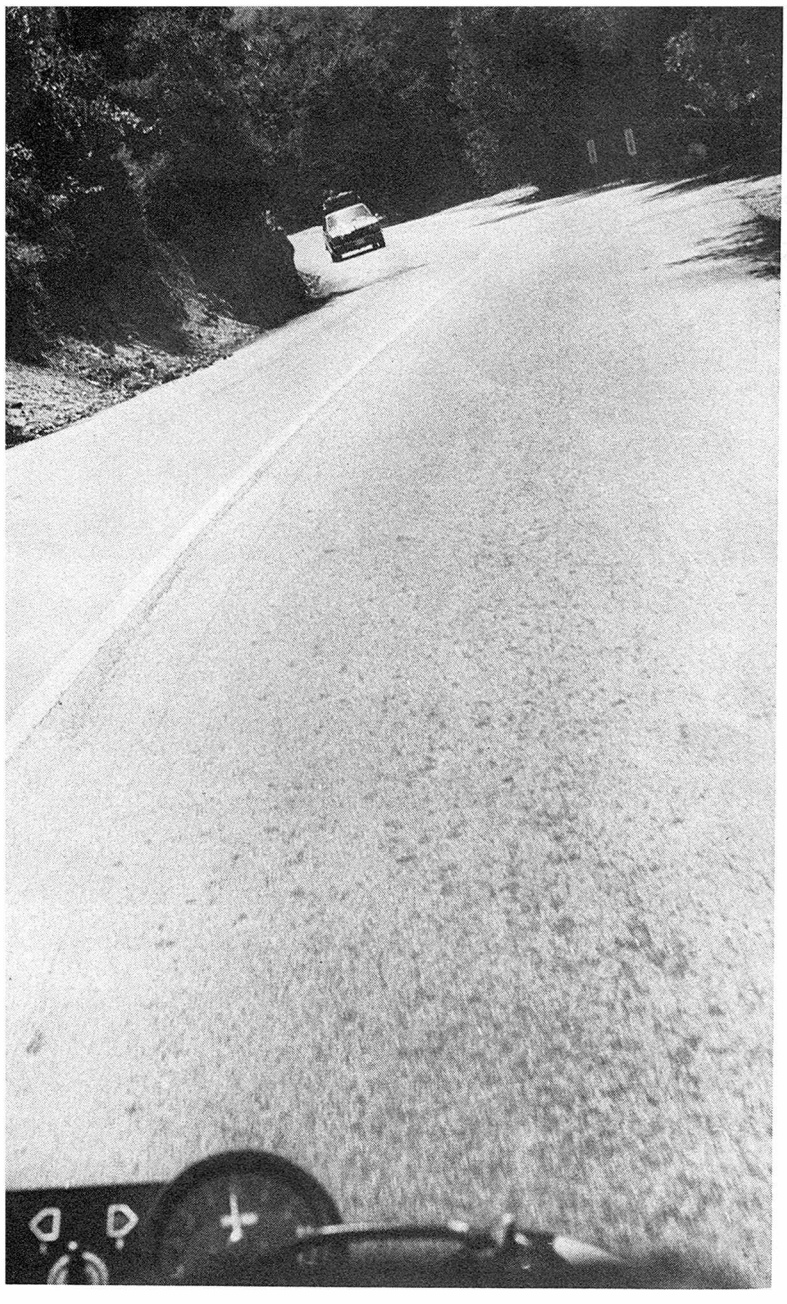


The road surface is critical to country-cruising too. Sudden changes in texture or oil drippings can send your tires skidding just as quickly and violently as they can in the city or on the expressway.

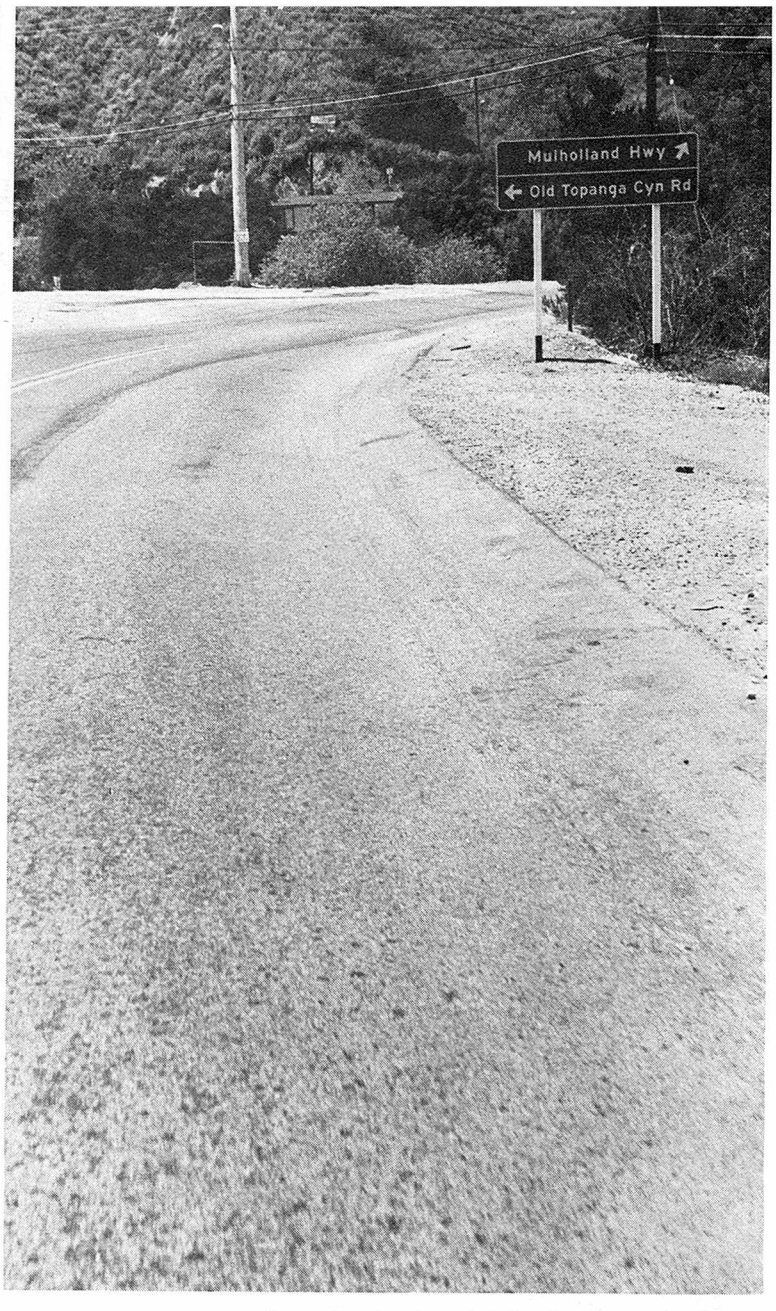
Practice through the same corners in both directions to get the feel of the machine both ways. Some machines will begin to scrape a muffler or side stand sooner when leaning to the left. You'll discover that you'll feel more in control if you lean forward a bit into the wind too.

smoothly and probably without much conscious thought, to nearly straight ahead until the corner is completed and you're ready to lean the back back to the upright position. For most of us the act of leaning the machine results in an unconscious outward turn of the bars so that outside steering is virtually an automatic reflex action. In any case, get used to the feeling of leaning over through the corners and then add the sensation of seeing how the machine will respond to *slight* and smooth throttle changes. Most riders find it most unnerving and equilibrium-upsetting to let off on the throttle in the middle of a turn and well they should.

Applying a gradually-increasing amount of throttle, particularly just before and during the time you're straightening-up the machine to blast down the next straight section, gives the most actual and seat-of-the-pants feeling of stability. The trick to quick cornering, then, is to enter the corner as slowly as its radius and the road surface dictates so you apply throttle



You're going to meet an occasional automobile or truck in the country and, unfortunately, your by-now-trained reflexes to consider yourself invisible apply here too. Honk and flash your headlight on and off to pass.



Even the best-maintained country road is going to dip and undulate more than an interstate highway. You'll find that the working suspension tends to wiggle the handlebars but you'll get used to it.

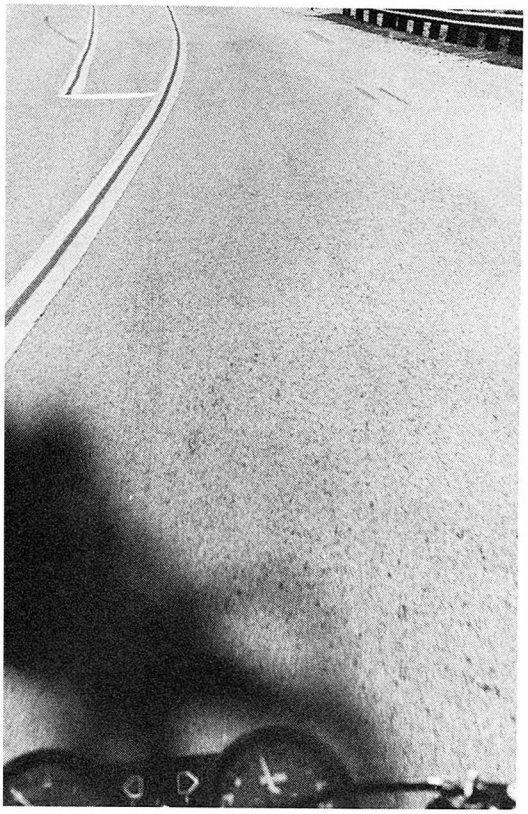
and accelerate out of it just after you pass the point in the turn when the radius is the tightest. Most country roads have few oil-drippings in the center so you can take advantage of the full width of your lane (assuming there's no oncoming traffic) to dive toward *your* side of the center line until the tightest portion of the corner is completed and then gradually swing a bit wider to coincide with the greater throttle opening and a lesser angle of lean out of the corner. If you do decide to use the whole road, you'd better pay particular attention to the road surface to see that the center of your lane isn't broken up or covered with someones' dumped oil slick!

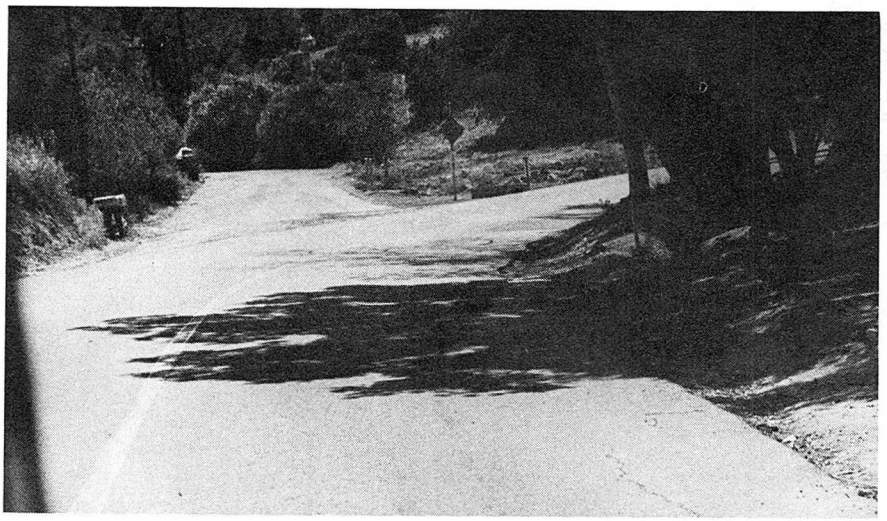
These actual road situations are the places where you put that dirt and parking lot leaning practice into practical application. The for-real road is where your mind can put its store of feelings about when the side stand or center stand will scrape into effect. The road is likely to have a lot more dips and bumps in it—again, things and feelings you'll have to 'program' into your storehouse of riding knowledge—that will force the suspension to work more than it did in that parking lot. When it compresses, the center stands and such will ground with a lesser angle of lean than with the suspension uncompressed so watch for that action. If your machine is one of those rare beasts that can be leaned toooo far over you may want to take a trick from the road racers and let your toe hang out just enough to touch as a warning that things have begun to lean too far—just be sure you put both toes in exactly the same place every time! The roughness of most public roads is going to be felt through the handlebars too so you'll have to revise your technique for holding on. The front forks are supposed to wiggle a little bit as the suspension smooths out the bumps and ruts and you should leave your arms loose enough to allow for a bit of handlebar wiggle. How loose will only come with practice but you'll

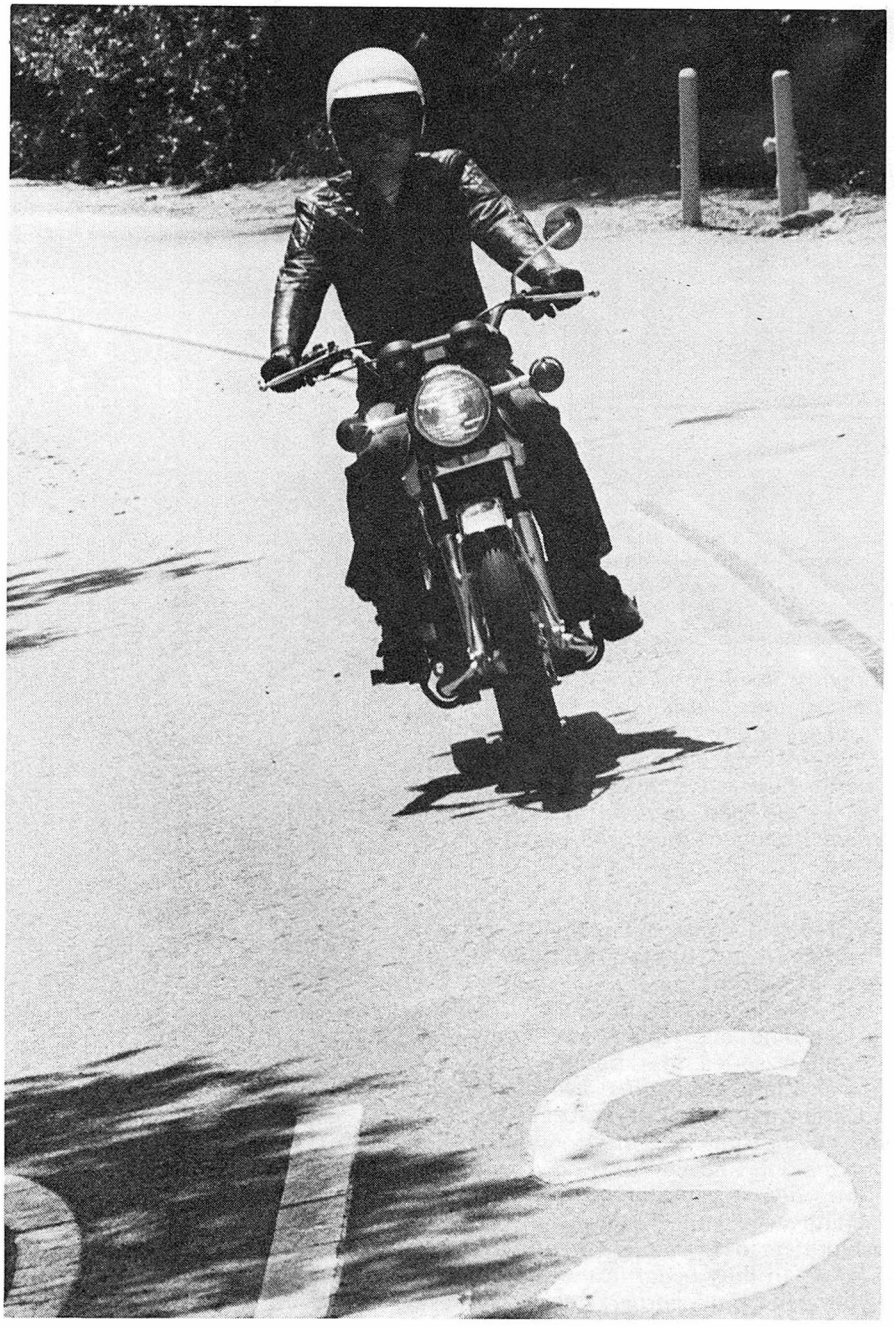
Country roads abound in blind corners that can hide anything from an empty road to an overturned gasoline truck. No matter how many times you've ridden the road, assume that there's danger around the blind bend.

soon reach a comfortable feeling of control without having to have a death-grip on the bars.

For your final lesson in country riding combine everything you know through a series of different-radius right and left hand turns, ess bends and sharp-radius corners. Learn-by-practice that you'd best do most of your braking and coordinated downshifting *before* you start to bank the machine over for the corner. Learn the absolute need for super-smooth upshifts when they occur in the middle of your exit from a corner. Accept the





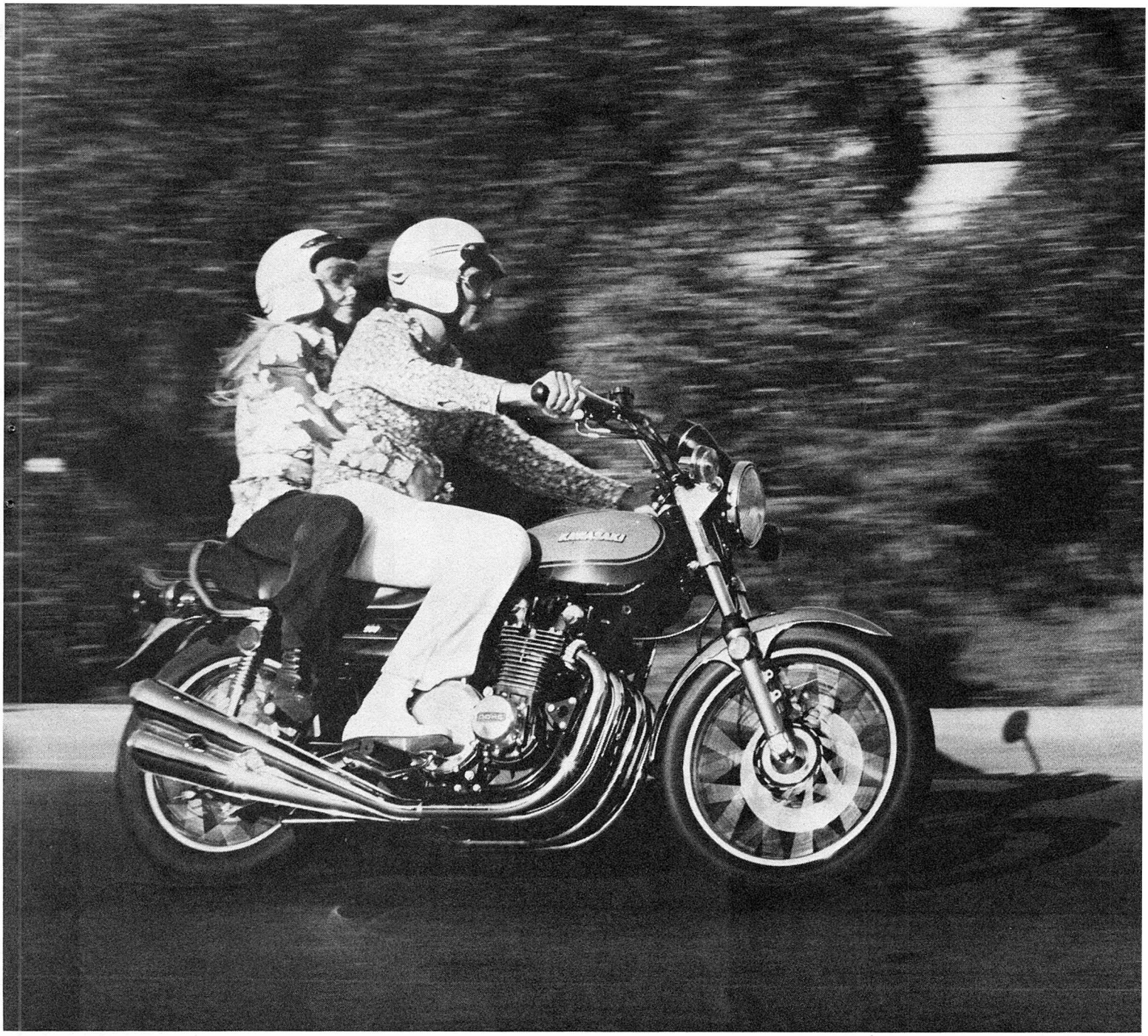


The condition of the road can tell you a lot about the possible dangers. You have the right-of-way here, but the oil and wear indicate that most of the traffic travels the road on the right so watch for no-stop cars.

Beware of shadows, especially on country roads. They can hide unfilled pot holes or loose gravel or, especially in the early morning, dew-dampened surfaces. Those black patches could mean trouble too.

There's plenty of unannounced stop signs in the country so don't assume ''your'' road is endless. This one loomed up without warning around a blind curve to demand some careful brake application right in the curve.

fact that your machine is far more controllable, whether on a straight or when cornering when it is accelerating than when it is decelerating. Through the days and days of country ridin' keep your mind crisp and alert, ready to catalog and program all the different effects of road surfaces, brake applications, angle of lean, downshifting, upshifting, the whole works until you can do most of it with little conscious thought on the familiar sections of the road. Then, you can use that storehouse of knowledge to really enjoy a totally fresh stretch of road wherever you find it.

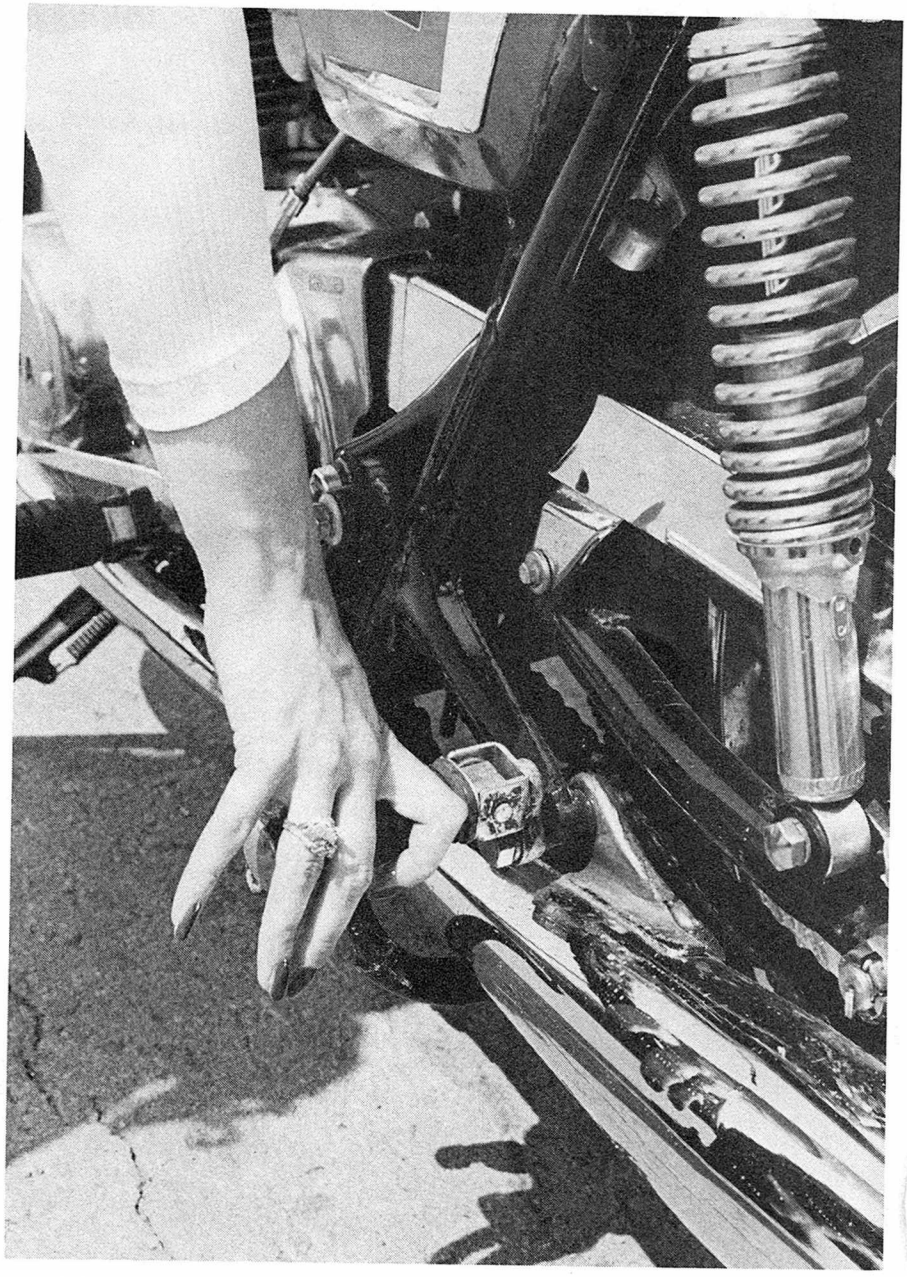


TIPS FOR TWOSOMES

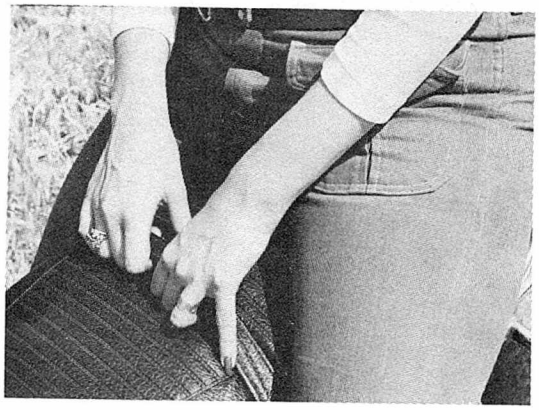
Motorcycling is a sport you can share, but be prepared for some changes . . .

One of your first impulses, once you've "earned" your rider's license will be to take a guy or gal along with you to share the thrills and feelings of 'cycling—save it! Wait until you've had *at least* a month's riding experience as a solo rider. One of the design basics that makes a motorcycle so responsive to ride is its light weight. Your weight will, perhaps, increase that weight by 50 percent, and that you've learned to handle. Adding a passenger can double the combined weight of riders and machine, and then, friend, you've a whole new experience awaiting you. The passenger's weight will serve as a dampener on the delicate movements you've learned so well, and worse, the pendulum effect will tend to exaggerate the controls' operation once you've overcome their initial resistance. There's more weight to transfer toward the front when you brake, more to transfer to the rear when you accelerate and more to lean from side to side as you corner. You'd swear it wasn't even the same motorcycle, and, in many ways, you'd be right.

Much of the "secret" of success in carrying a passenger lies in your training him or her to try to become part of you. They have to sit down—those hang-on seat straps are *always* no no's—with their arms wrapped firmly but not too tightly around your waist so they'll feel some



Explain to your passenger that you have to get the machine started before he or she can board and show how the folding passenger pegs operate with special emphasis on keeping one's feet firmly in place.



That strap on the seat is required by many states for the passenger to hold on to—never, ever use it! It forces the passenger to sit too far to the rear and makes him a part of the machine instead of you.

degree of confidence when the machine tries to upset *their* equilibrium by leaning through the corners. Talk to *any* passenger, even if he or she claims to be an "expert" passenger, before you even start the machine. Tell them that you're going to start the machine before they get on and that they are to keep their feet on the pegs and their fanny on the seat from the moment they board until you're ready to shut the engine off. No, they don't give turn signals for you. No, they don't try to lean one bit more or less than you do to "stabilize" the machine. No, they do *not* put their feet down when you come to a stop sign or signal. No, they do not hold onto the seat strap, only to your waist. The passenger should press his body against your back and try to keep it there so his weight will at least coincide with yours as you lean into the wind or make those subtle side movements when cornering. You be sure to sit just far enough forward so your passenger's fanny has a comfortable amount of the seat. You don't have to sit on the gas tank, but the further forward you get, the better to help maintain something like normal weight distribution. Try to impress on your passenger that you and he or she must work as a team to maintain maximum control and to truly appreciate the real thrill of motorcycling —it's all true.

You are going to have to make some definite adjustments in your solo riding technique to even approach the same feeling of control with a passenger aboard. The main thing to remember is that the machine weighs between 20 and 40 percent more. It's not going to accelerate quite as quickly as it does with just you and it's going to take a lot longer to stop. Most of that excess weight is over the rear tire, so it's going to have super traction (your owner's manual should suggest some increase in tire pressure

Have your passenger arrange his fanny so he feels confident and comfortable. He can grip completely around your waist or just the forward edges of your hips but must press his body against yours.

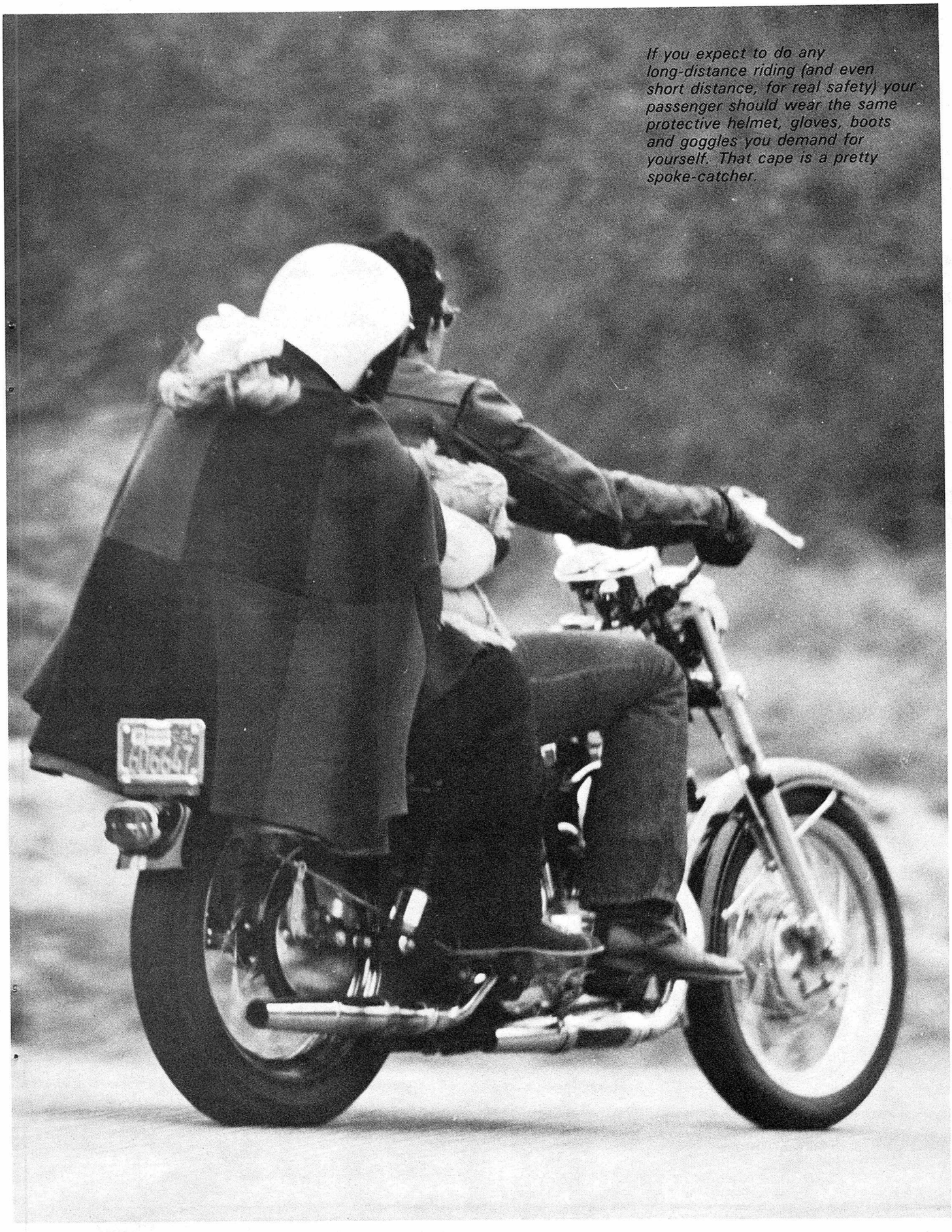
The most difficult thing for many motorcycle passengers to learn is that you do not *want them to put their feet down every time you stop. If you expect your rides to be a ''success'' you have to gain their confidence.*
Explain some of the basics of riding to your passenger so he or she knows why the machine must lean to corner. It's essential that your passenger try to follow your body movements when you lean into a corner.

when carrying a passenger) and the front tire is likely to have a bit less traction. That light front end will usually be felt as a greater wobble in bumpy corners and surface changes like rain grooves may set it to wobbling more. Obviously, if your passenger decides on some sudden movement that is counter to yours the whole machine is going to be affected so you're wise if you take extra time to build his or her confidence in your own abilities. That extra weight is going to decrease your ground clearance by a lot, so keep your cornering speeds way down to avoid grounding the muffler, side stand and (now) the passenger footpegs or the passenger's feet! This is one partnership that can

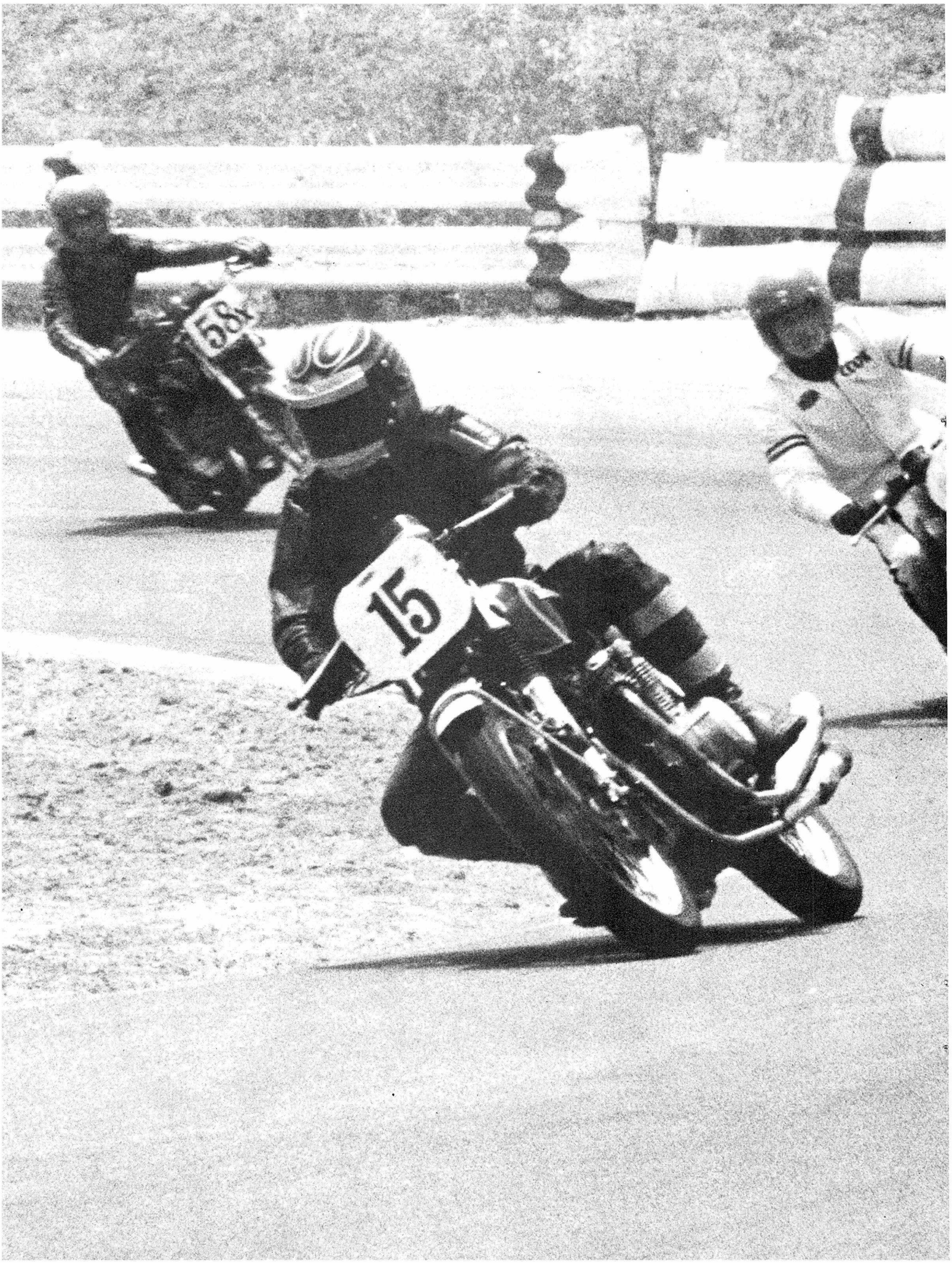
You'll have a feeling of far greater control if your passenger grips your thighs with his or her knees and it'll be more comfortable in the wind-blast too. You may want to lean a bit further forward with two up.

spell a trip to the hospital or worse if the two of you don't work as one. Take it slow and easy for the first few miles until your passenger can build up some confidence in you. Try to warn that back seat rider when you know you'll have to make a sudden stop or a quick turn so he won't be caught off balance. You can generally sense how well your passenger is adjusting to your riding skill by how tightly he or she holds on. Most passengers will begin to release their stranglehold on your hips or middle after they begin to feel more at ease. Later, you'll feel their grip tighten when you've exceeded their confidence level and that's a good sign to cool it. If this is a passenger's first ride you should limit it to a mile or so. Stop the machine, get off, and discuss the ride with your passenger to answer questions and so the both of you can critique the other's performance. Some passengers just can't adapt to leaning over in the corners, others can't stand the falling-off-the-seat feeling of rapid acceleration. If your passenger has either fear, you'd be wise to listen and relax your cornering or acceleration a bit so your passenger can relax and work the machine *with* you.

If you have to carry both camping gear and a passenger, you're wise to tie some of the gear super-securely to the front forks to help equalize the weight distribution. You may want to fit straighter handlebars if you do a lot of two-up riding so you can sit further forward.



If you expect to do any long-distance riding (and even short distance, for real safety) your passenger should wear the same protective helmet, gloves, boots and goggles you demand for yourself. That cape is a pretty spoke-catcher.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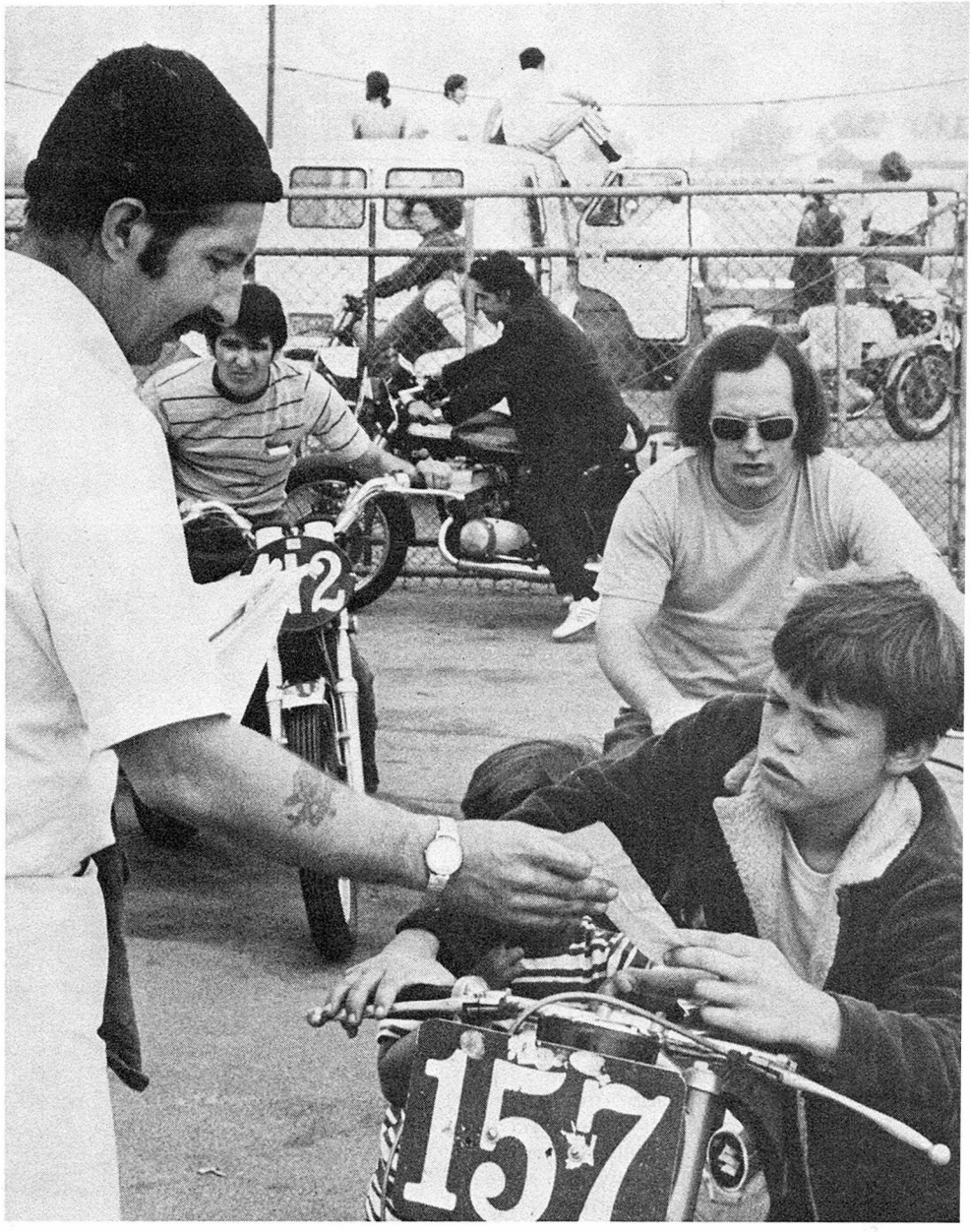
GRAND PRIX PRIMER

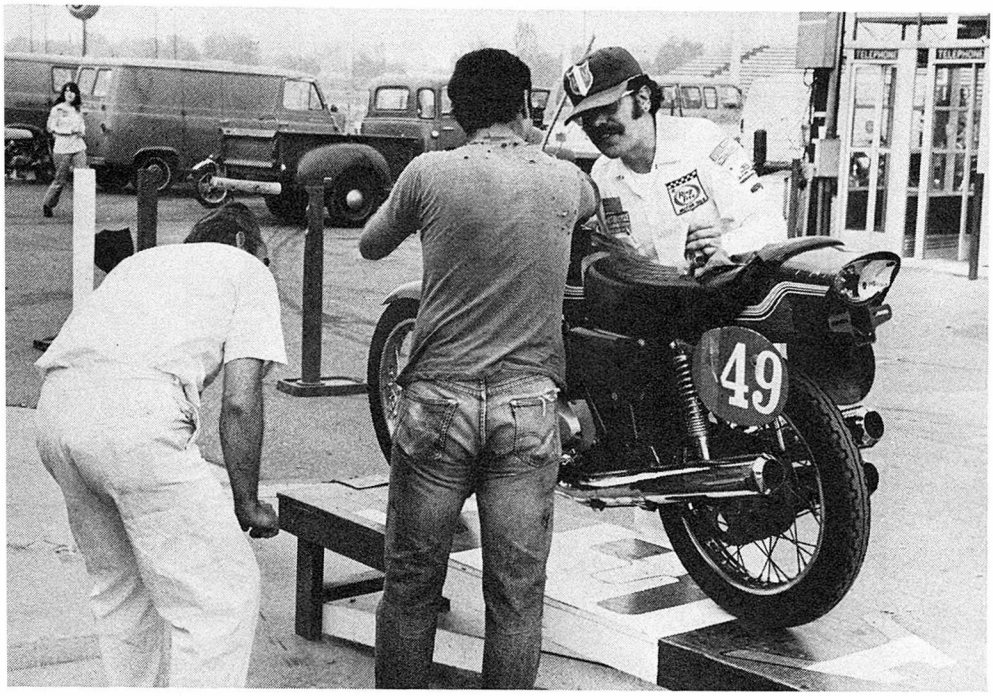
So you think you'd like to start road racing?

If fast, muffler-scraping, tire chirping road riding turns you on you may well be a candidate for some real handlebar-to-handlebar road racing competition. The next logical question is how? If you live in California (ain't it always that way?) you'll have choice of three different clubs you can join for amateur road racing. If you live in most of the rest of the country you'll have just one choice. The one choice is the American Motorcycle Association, P.O. Box 141, Westerville, Ohio 43081. Californians have that choice too, or they can opt to race under the rules and sanctions of either the American Federation of Motorcyclists at 2754 Monterey Road, San Marino, California 91108 if you live in Southern California, or 2910 32nd St., Sacramento, California 95817 if you live in northern California. The AFM has some active affiliates in other parts of the country and those addresses can be obtained from either California chapter. The American Cycle Association, 1409 Cypress Point Dr., Placentia, California, also sponsors races in the Golden State. A stamped, self-addressed envelope to any of these groups will bring a current membership application and some idea of when the next races are scheduled. The American Motorcycle Association publishes the schedules of their amateur and professional events in the monthly *AMA News* ($3 a year for members or non-members). Your first step should be to attend one of the local races to see if the classes for street-going (they call them ''production'') motorcycles seem to be the kind of thing you'd like to run in. The pits are accessible so you can actually talk to other racers, perhaps even guys with machines identical to yours, to find out more of the details and what kind of chance you'd stand with your equipment.

If you do decide to enter a road race you'd best obtain a copy of the rules from the sponsoring organization. All three of these race sponsors allow strictly-stock machines to race, but most of them also require a few safety modifications like safety-wired drain plugs, folding footpegs, removal of center and side stands and other details that you may or may not be able to accomplish in the pits before your practice time. Your machine will be inspected by the safety crew to see that it has the proper number plates (they'll assign you a number for the day) and that it complies with their safety regulations. The seasoned riders that serve on the club staff may also watch you during your practice laps to see that you have some degree of competence aboard a motorcycle. If the other competitors catch you doing something consistently stupid or dangerous they have the right (and, really, the responsibility for the other riders' safety and their own) to report you to the race director who may suggest you practice a bit more before



Find out by mail or through a local dealer when and where the nearest ''production'' class road races are held and get your entry fee (about $10) in early. Show up, with your machine prepared as specified in the rule book, at least an hour before the first practice is scheduled so your machine can go through technical inspection.

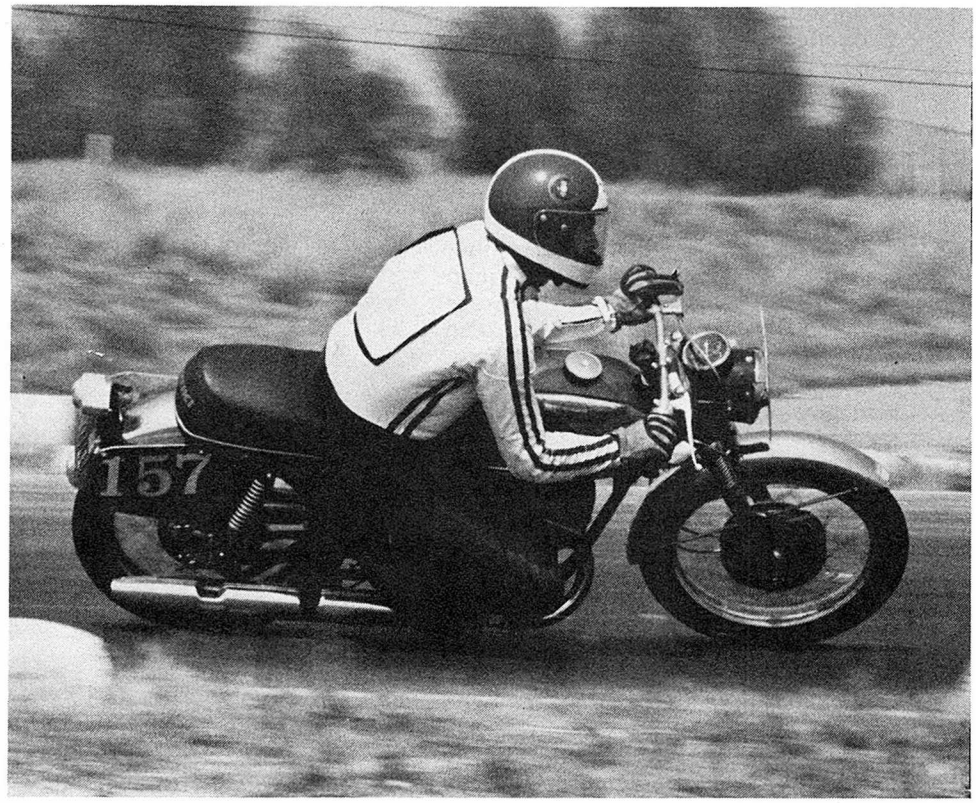


The technical inspectors are looking for unsafe mechanical components or blatant modifications. If you followed the rule book (and the other competitors advice) you shouldn't have anything to worry about. Most of these men are nice enough to warn you about any mechanical flaws they feel should be corrected so you can fix them before practice.

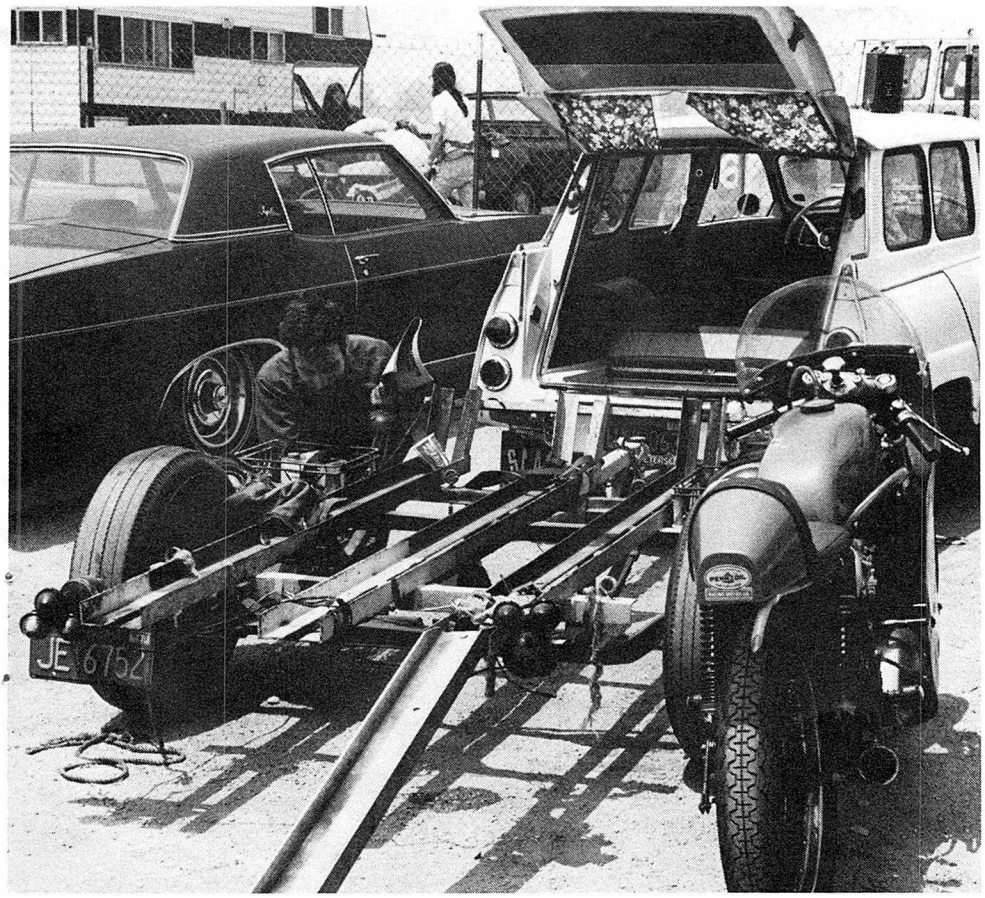
competing. There is seldom any chance for you to actually practice at a race track other than on the morning or, in some cases, the day before the race.

The actual race day program normally consists of specified practice times for the different classes of production motorcycles and different practice times for the modified ("Grand Prix") machines. If the organizers can manage it you'll have at least a half hour to practice. The actual racing starts right after lunch—that is, it's supposed to *if* the practice sessions were run off on time, and they seldom are. Most of the clubs break down the various motorcycles into classes something like: 0-250 Production, 350 Production, 500 & open Production, 50-200 GP, 250 GP, 350 & open GP and sidecars. Some will have special classes for older racing machines and/or for current "Superstreet" motorcycles. The actual race may range from 8 laps to 20 depending on the length of the course—the number of laps are usually figured to give you twenty to thirty minutes of actual racing. The winners and, often, as many as the top ten in each class will receive trophies and the thrill of having competed and finished. There's nothing much in the way of prize money for winning a production race. If you find yourself winning regularly in these amateur events you may want to try your hand at professional road racing as sanctioned by the AMA but you'll need something a bit better than a street-equipped motorcycle to have any hope of winning.

The "production" motorcycles are just that, off-the-dealer's floor production machines. You can move the exhaust system, remove the air cleaner, polish the ports, rejet the carburetor, change spark plugs and tires to something more suitable for racing but that's just about it. The AFM and ACA "Grand Prix" classes correspond roughly to the AMA's "Professional" classes. These machines utilize stock engine castings and gas tank labels and that's about as close as most come to street machines. Some of the motorcycles, like the 250cc and 350cc water-cooled Yamahas and the XR750 Harley-Davidsons are pure racing motorcy-



The make, engine-displacement and year model of your machine won't matter much; there's most likely a class that you'll qualify for. Spend the half hour or so of practice time learning the road and the portions of the course that can give you traction or handling trouble. Do NOT try to race with the other riders during practice!

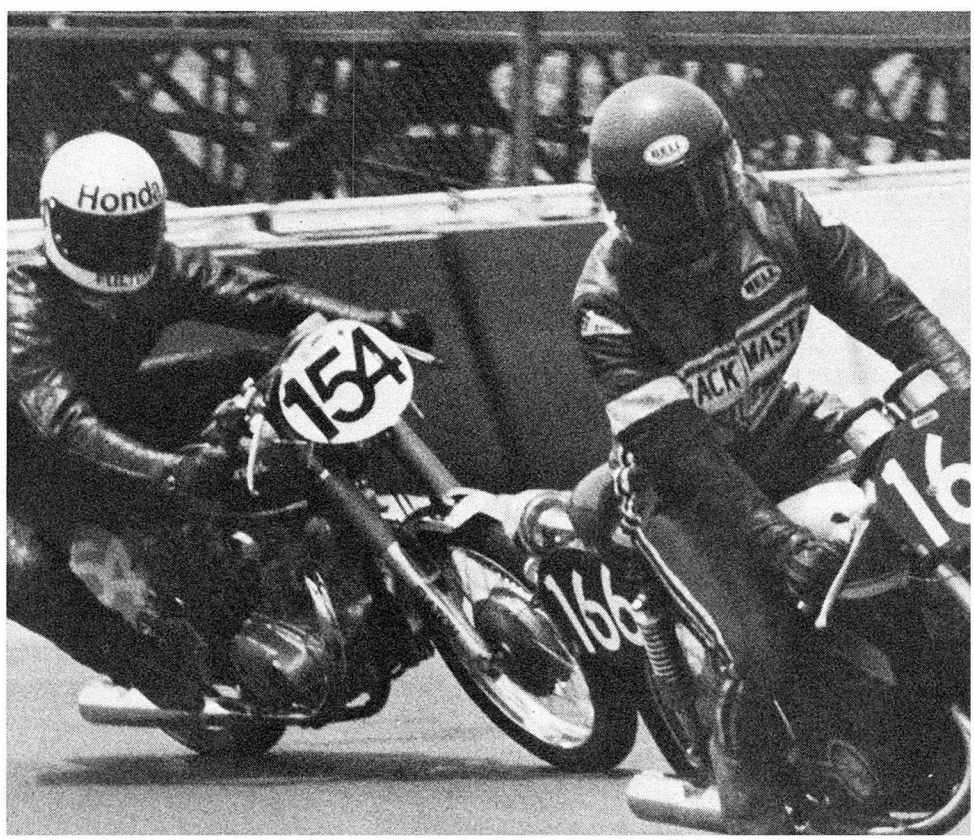


cles that have been ''produced'' in sufficient quantity (200) to meet the AMA standards. The only thing that keeps the exotic Italian and Japanese machines from competing (other than that 200 minimum) is that there is a claiming rule wherein the machines can be ''claimed'' by a competitor in that same class for $3500 if the machine runs in the 0 to 250cc class and $5000 if the machine runs in the 251cc and open classes. The winners are worth every penny of that amount. You can actually buy a Yamaha or Harley but that's not the way to do it. The way to do it is to convince some dealer that your race-winning publicity will more than offset his cost of buying a racing motorcycle and maintaining it for you. If you're really good you may even convince one of the manufacturers or importers to sponsor you, but their team riders seem to come from the ranks of the dealer-sponsored. You can, of course, buy your own machine and tune it and transport it and feed it fuel and oil and spark plugs and tires and pistons and the like, but that's going to run a good $3000 or more a season (plus the cost of even a used machine) so you'd better have a lot of spare time and $5000 or more to spare after you feed yourself, your transport vehicle and your pit crew. Production racing is just as much fun and thousands cheaper!

Most of the competitors will haul their machines to the race in a pickup, van or trailer even in the ''production'' classes. The machines have been tuned during the week before and a ride along the road to the track will just force some wear and vibration loosening that could better wait until the actual racing takes its toll.

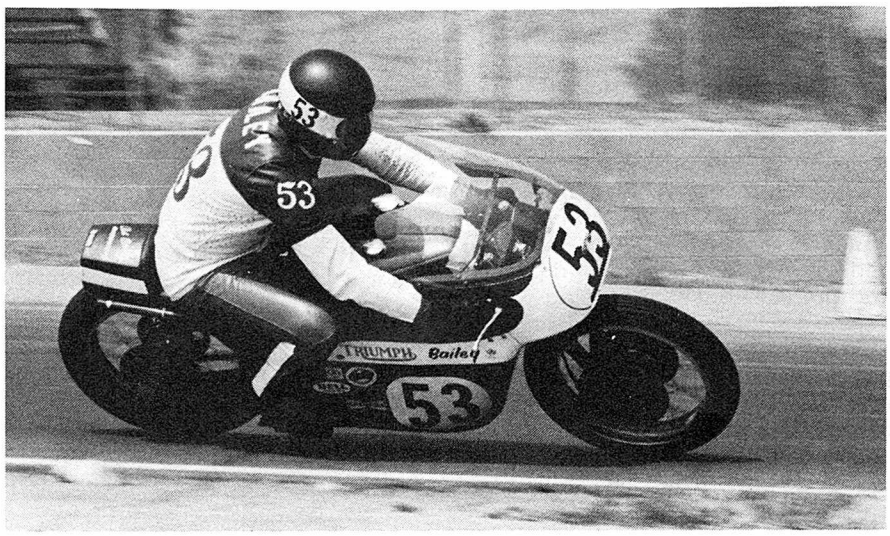
You'll see a strange mixture of machinery at ACA and AFM ''amateur'' road races that can range from ex-factory Harleys, Kawasakis and Yamahas to ten-year-old street motorcycles to the latest ''super'' street Honda and Kawasaki fours. The rider's skill will vary just as widely. The ''production'' machines are not allowed to have a fairing.

You're wise if you consider your first few races as simply chances to tour around a road race course as quickly as your ever-growing skill will allow. Don't let some more experienced rider lead you around or you'll find yourself sliding across the track on your backside.



PHOTOS BY AMY O'DONNELL

The epitome of a low-budget racer. You could probably buy this Honda for $200 in "perfect" condition. With a few bits of safety wire, some good tires, fresh spark plugs and new brake linings add another $100 and you're ready to race. If *you like it, buy better equipment.*



Bob Bailey is the club racer's dream hero-come-true. He competed against the factory-sponsored teams and lost because, he felt, they had better equipment so he "claimed" this factory-prepared Triumph road racer for the then current $3500 and walked away with a dream.

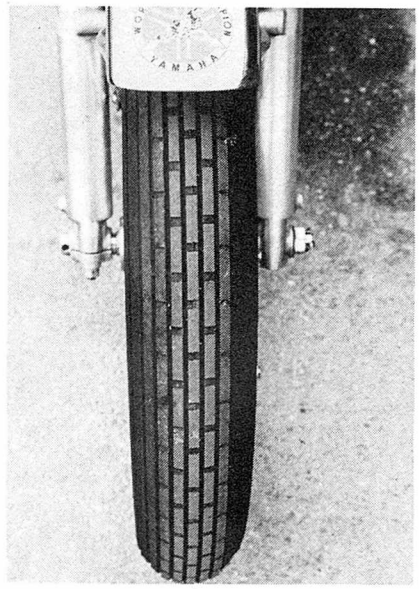
ROAD & PRODUCTION RACERS

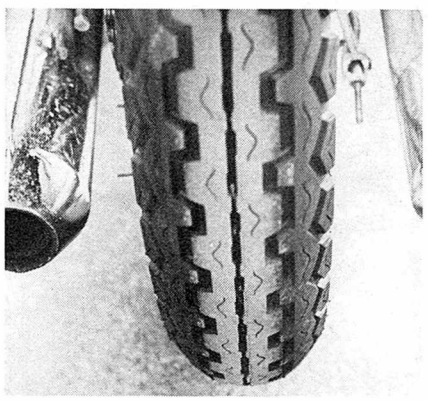
One is a road machine that looks like a racer and the other a street machine that races —and both are a joy.

There are two schools of thought about what constitutes the ''ultimate'' road-going motorcycle. The chopper people feel that the modifications made to their machines speak more about what motorcycling is all about than any factory-produced machine at any price. These long-forked beauties are at their best cruisin' down the endless miles of superhighway that make America's furthest corners accessible to all with a week to spare. The other school of thought feels that the road racing motorcycles are the ultimate two-wheeled trip. The more a motorcycle looks *and* performs like a road racer the happier these guys are. The flaw in both forms of ''perfection'' is that the closer a motorcycle is to a road racer the more uncomfortable and impractical it becomes for covering those endless miles of interstate—it's only real ''home'' is the winding country road or the race track. The chopper is certainly not the kind of machine we'd want to use to try to match the 250cc lap record at Riverside or Daytona—its extended forks and vestigal front brake make corners and quick stops a terror. There's really not much to say about choppers since they're mostly a visual trip; you either love 'em or hate 'em and that's that. The guys that favor the winding road machines, though, are worth looking at if only to try to understand why they do what they do. . . .

There are basically two ways you can express your love for traveling a twisting road on a motorcycle: by building or buying a machine that at least looks like a road racer *or* by taking a street machine and actually entering it in competition.

The pseudo road racers may actually have far better brakes, a more responsive (if not actually more pow-





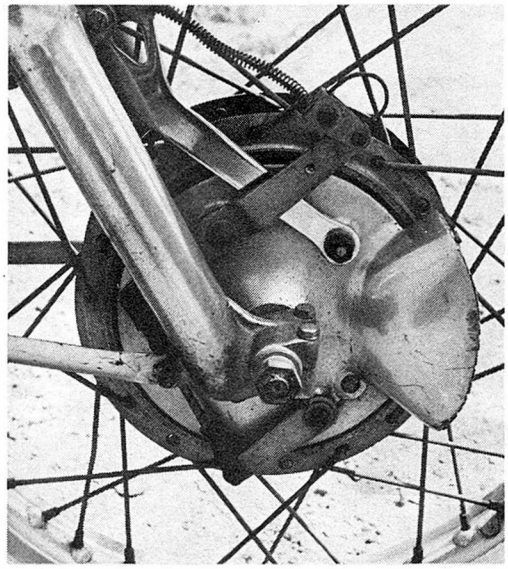
Most of today's production motorcycles are prospects for competitive road racers with some simple modifications. Replacing the front and rear tires with road racing patterns improves the handling and safety.

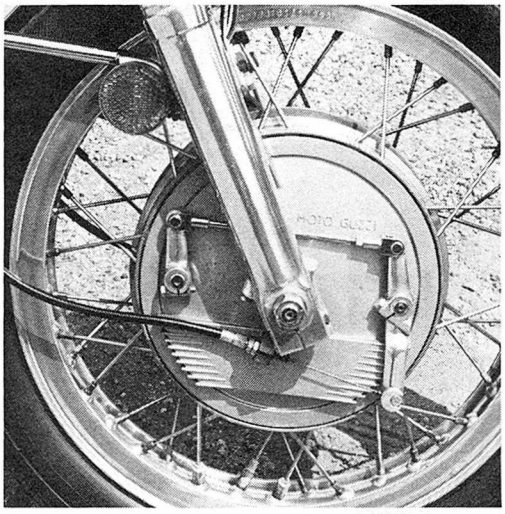
erful) engine, upswept exhaust, and an ability to lean over to the limits of the tires' adhesion in a corner that no standard street-model machine can boast of. These same machines usually have low and short handlebars with footpegs mounted to the rear and control pedals relocated to match, so the rider is virtually forced to lay and lean toward the tank while he rides. The tank itself is often larger than "standard" with a pronounced hump to give the rider some support for his chest, and the rear-mounted seat is just long enough for a single rider.

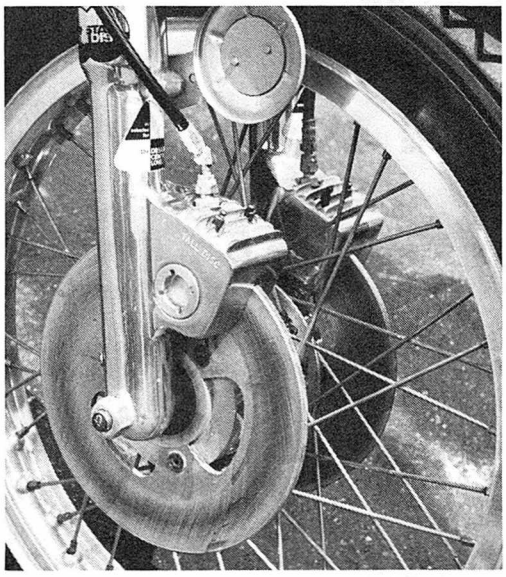
This whole concept of a road racing machine for the street originated in England where the owners would race from cafe to cafe on warm Sunday mornings. The term "cafe racers" was coined to describe their mounts and it stuck. A cafe racer can be anything that looks like a road racer. Some of them, like the Norton "Production Racer" really are racing machines that have been fitted with lights, horns and other street-legal equipment. Some of them are absurd little Honda 160 twins complete with fiberglass streamlined fairings and spotless paint schemes. The Europeans caught the cafe racer fever in the mid-sixties and offered models like the Bultaco Metralla, OSSA Sport, Montessa Impala and Ducati Diana in the under-250cc class. These machines had features like alloy rims, close-ratio gearboxes, highly-tuned (for the time) high-output engines, oversize fuel tanks and, of course, low-mounted handlebars and rear-mounted footpegs and controls, but they only sold in limited quantities and the idea of cafe racing seemed to die. Now, though, the swing seems to be to offer big-bore machines like the Dunstall-equipped Norton, the Moto-Guzzi V-7 Sport, the Ducati 750, the Laverda 750SF, and the rare MV Agusta Four. Dozens of accessory firms advertise oversize fuel tanks, fairings, streamlined seat/rear fender units and all manner of disc, double disc and drum brakes that cater to the cafe racer's dream of a personal motorcycle.

The died-in-the-wool cafe racer fan will claim that nothing will ever match his Velocette Thruxton or BSA Gold Star Clubman or street-modified AJS 7R or Matchless G50, but all of these four are 350 to 500cc four-stroke, British-built (*and* long out of production) singles that are the very machines that started the trend. The performance-oriented cafe racer will insist on things like single or double disc brakes, giant carburetors, camshafts or porting that supposedly matches the factory road racers, close-ratio gears, alloy wheels, road racing tires and virtually every possible-for-the-street mechanical detail of a real road racer. He doesn't seem to mind that his finished mount can't be ridden without a broken back for more than an hour and only by one man. We have no quarrel with street-going motorcycles that simply look like road racers with, perhaps, a slight rearward set to the footpegs and lower bars. Trying to ride a racer on the street, however, is more of an ego trip for the owner than it is motorcycling.

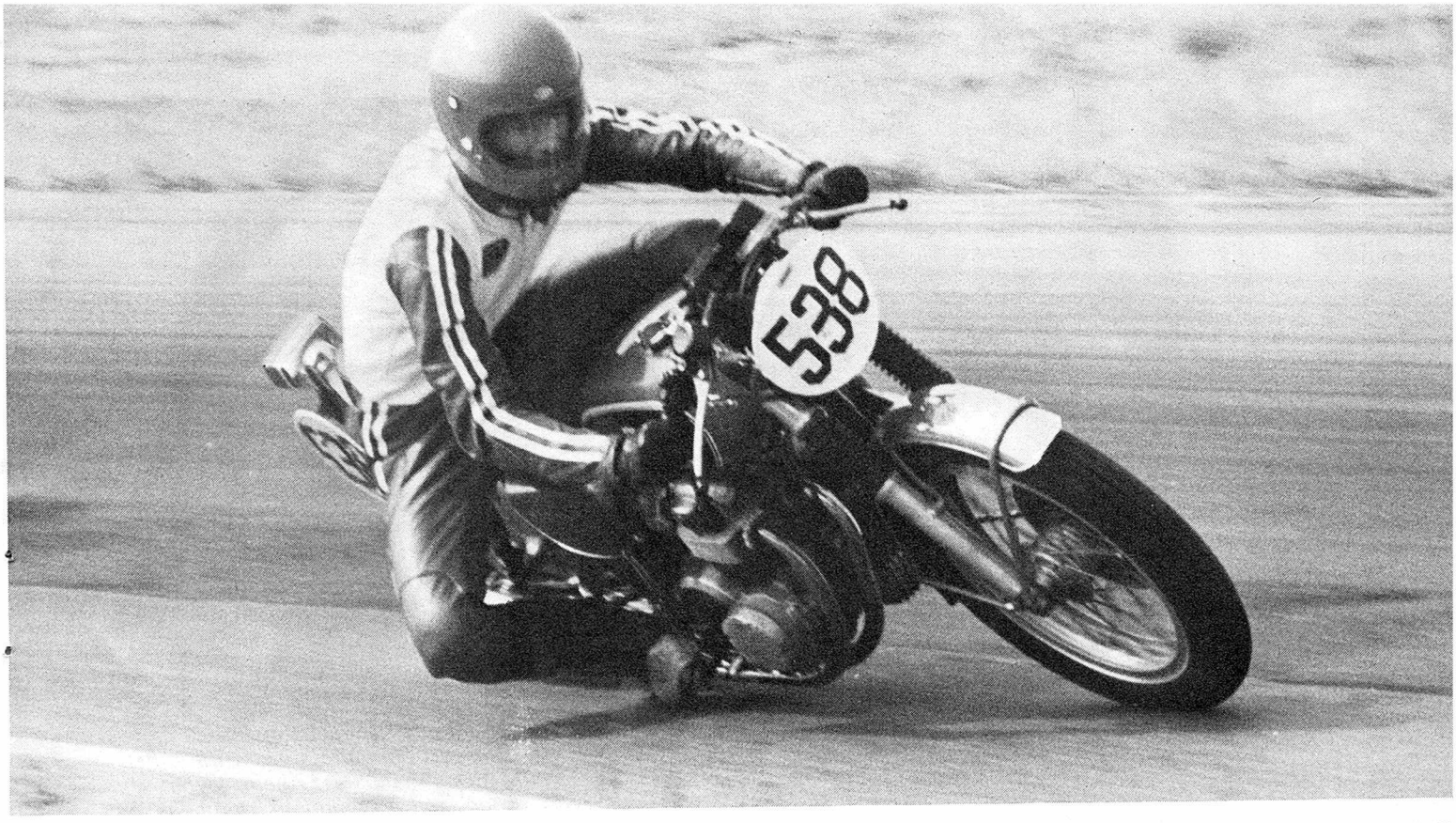
The guys that really seem to get the most out of the sport are those that actually compete in the AMA, AFM or ACA-officiated "production" class road races. The cafe racer machines do well enough in these classes but certainly no better than, say, an

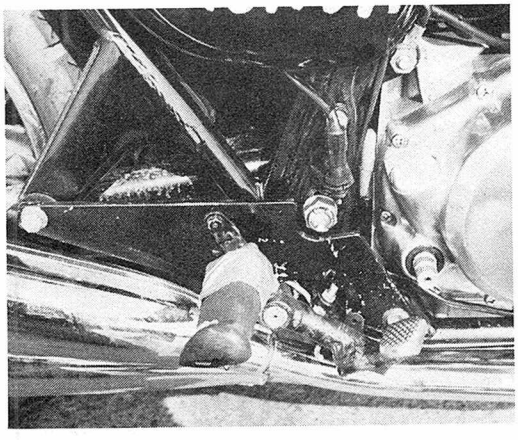


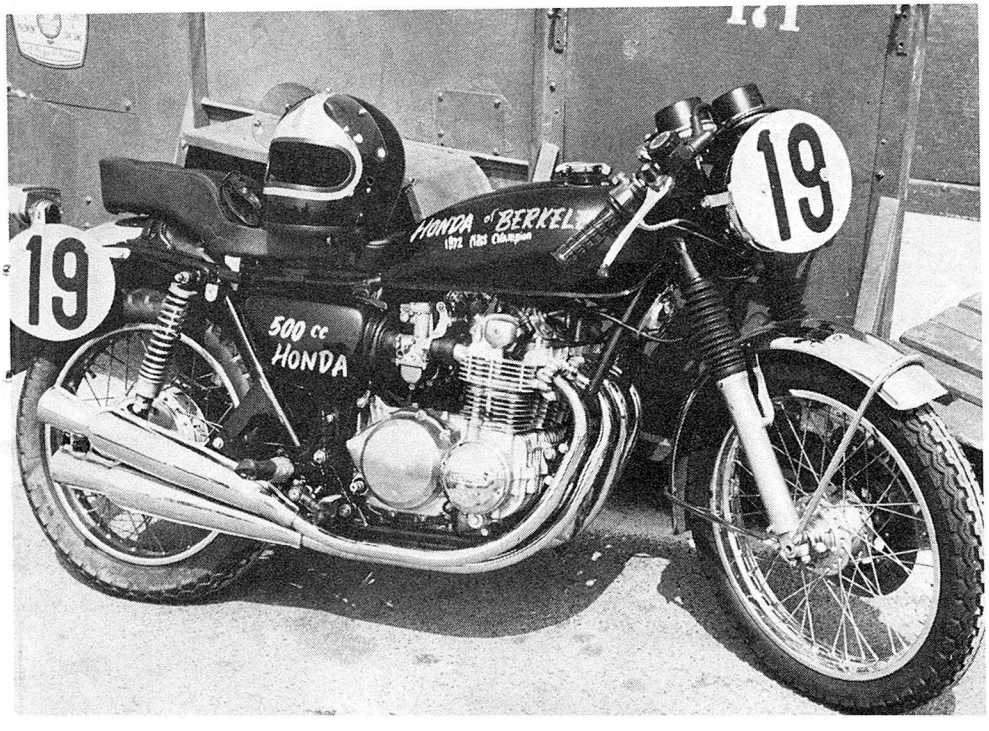


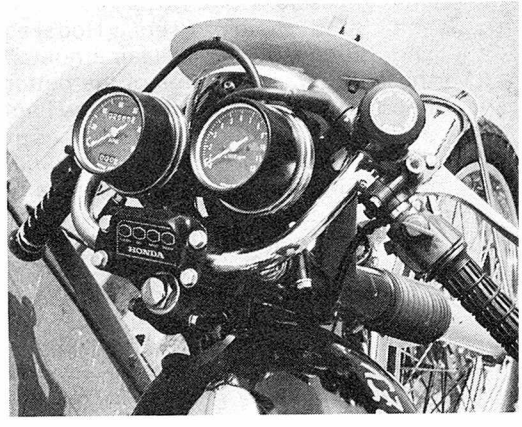


The older vented drum brakes have given way over the years to giant double leading shoe brakes like the new V-7 Moto-Guzzi, to single discs like the Honda and Kawasaki fours or to Dunstall/Norton double discs.

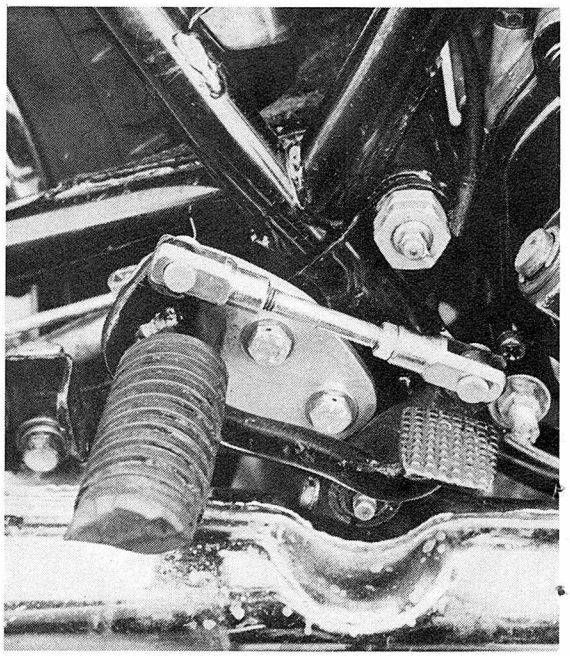






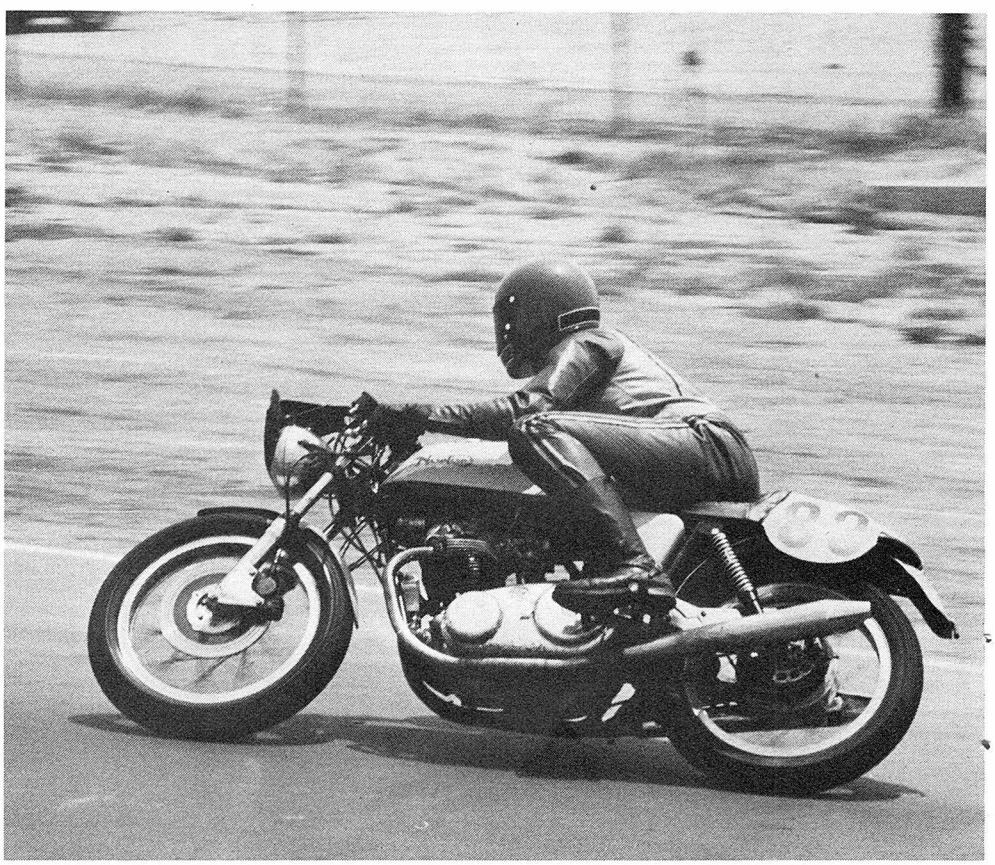


The Honda 500 and 750 fours make excellent production road racers. Lower handlebars and rear-mounted footpegs and pedals allow the rider to tuck in closer to the machine for better cornering control.

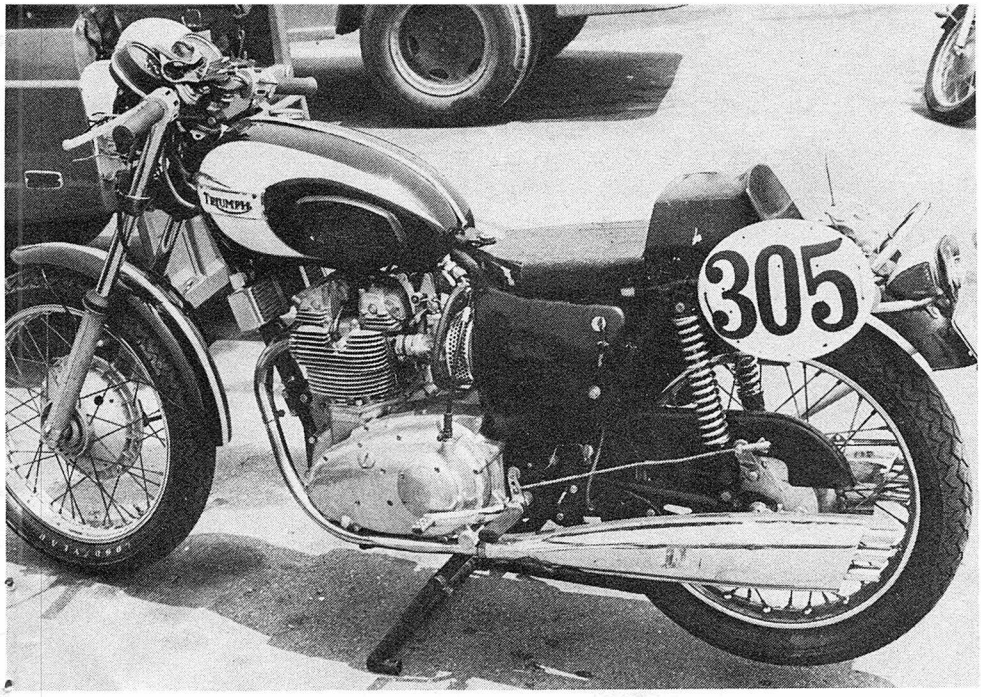


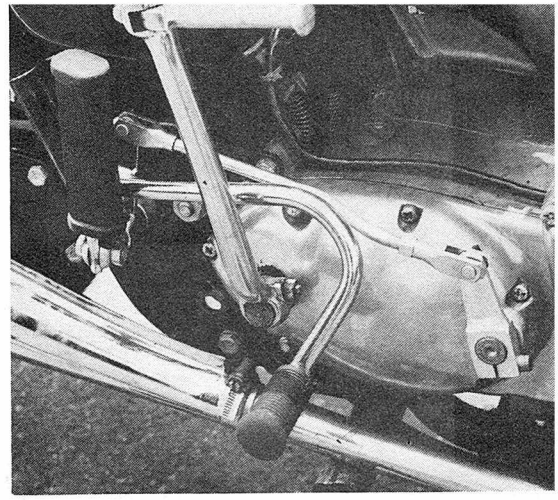
The three cylinder Kawasakis and Suzukis compete against the other 750cc machines. Again, lower bars and rear-mounted footpegs are a help in handling. The machines must have lights and mufflers to race.

R5 Yamaha or a CB350 Honda of equal displacement. One thing's certain: actual road racing on an equal-displacement class footing certainly separates the ill-handling machinery from the race-ready and it quickly exposes the engines that just won't last. If you've much of a knowledge of motorcycling you won't be surprised to learn that virtually all of the Japanese twins, triples and fours do extremely well. What is surprising is how well the BMWs, Kawasaki 100cc moto-crossers. Honda XL250s, Yamaha 90cc moto-crossers, Hodakas and 350cc F-9 trailbikes fair amongst these road racers. Some of the better riders don't even bother to fit low bars and rear-mounted footpegs, but they're definitely a help under actual road racing conditions. Just about any machine can run with enough displacement classes to almost make it a run-what-ya-brung type of racing. After all the magazine road tests and factory advertising campaigns it's refreshing to see a Honda and a Yamaha and a Kawasaki and a Norton and a Moto-Guzzi and a BMW 750 actually race one another! Somehow, no matter what brand you prefer, the sheer thrill of the race seems more important and more interesting than whether your favorite wins or loses. Now that, folks, is what racing is supposed to be about.

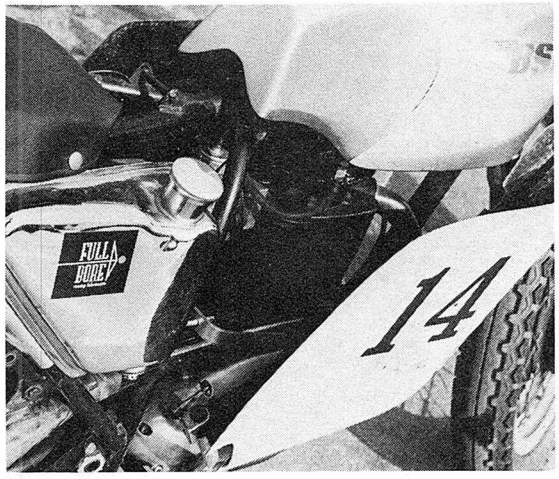


The Norton factory and Dunstall both make racing parts for the quick 750cc Norton twins including rear-mount footpeg kits, larger fuel tanks, double disc brakes, modified exhausts and streamlined seats.

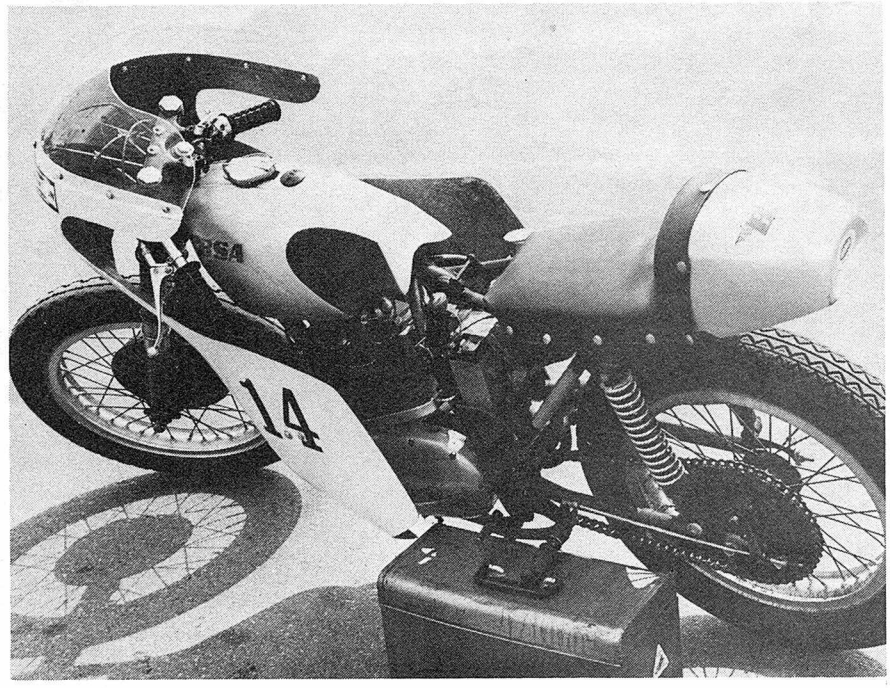


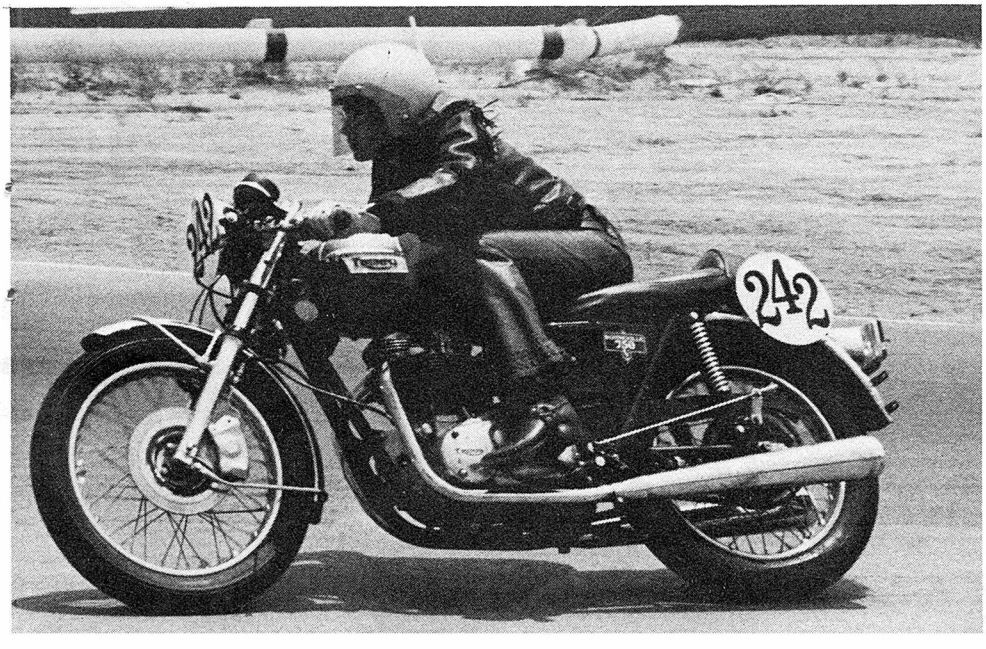


The Triumph and BSA triples compete against the Nortons and the Japanese machines in the "open" production class. The rules require removal of the center and side stands but the lights must operate.



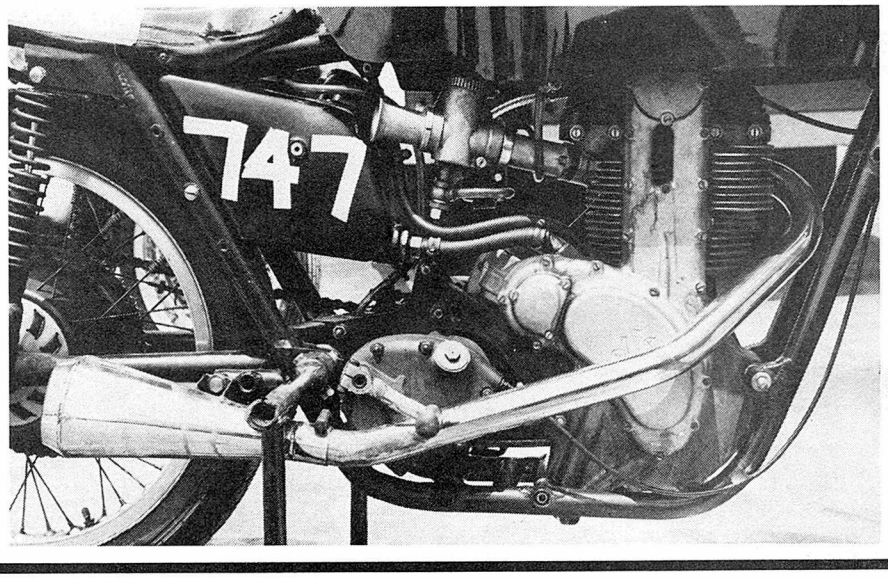
You can expect to find just about any type of motorcycle in the "production" classes, including a few BSA Victors like this one and even an occasional Gold Star Clubman. This Victor competes in the "GP" class.



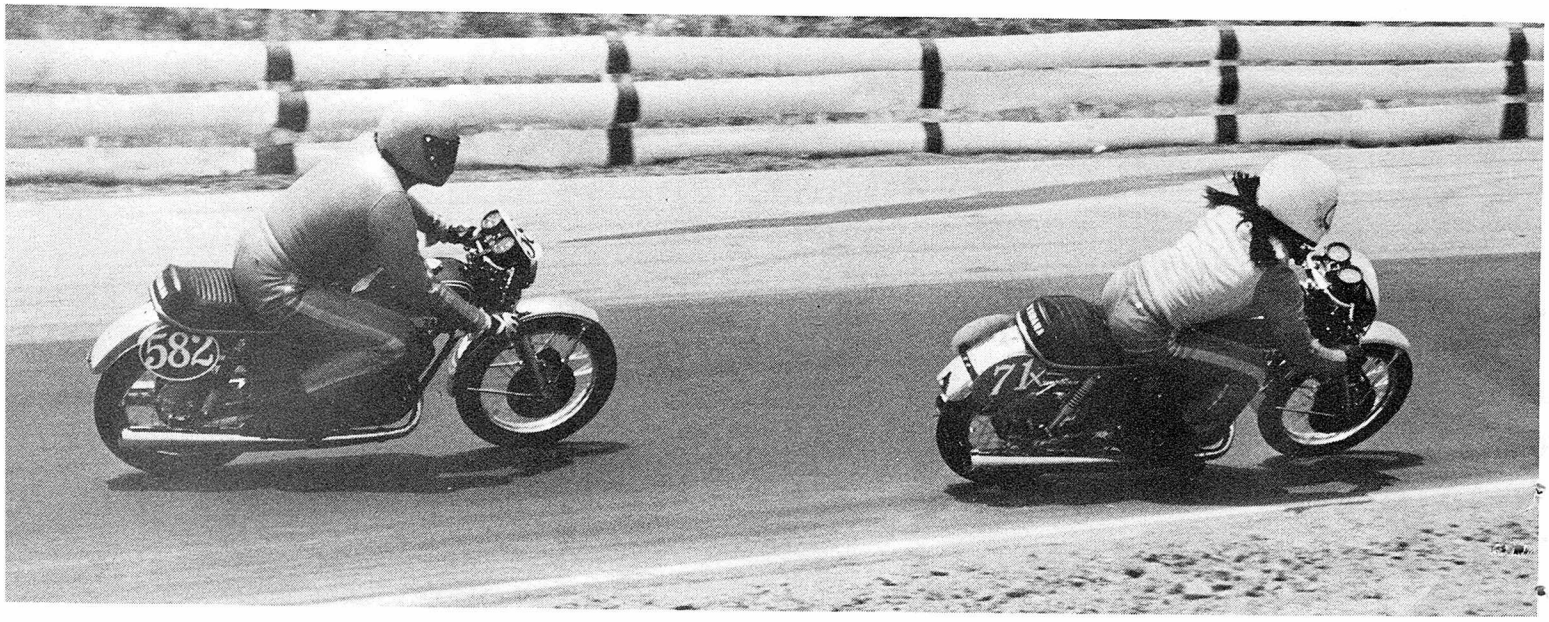


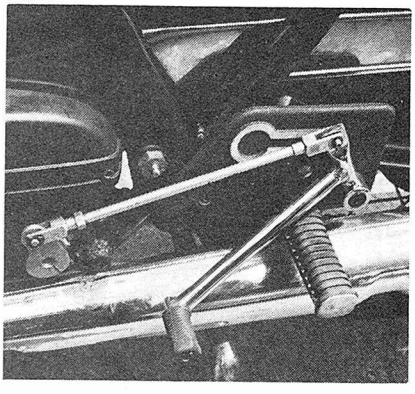
Some of the newest and some of the oldest motorcycles compete in AFM, AMA and ACA club racing. Only the seat and handlebars have been changed on this new Triumph 750 twin.

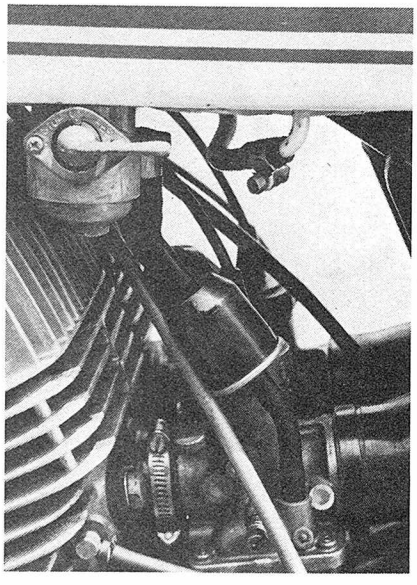
The highly-modified machines compete in the ''Grand Prix'' class but some of the ten-year-old racers run in what's called a ''thumper'' class for singles. This is an AJS 350cc 7R from the late fifties.

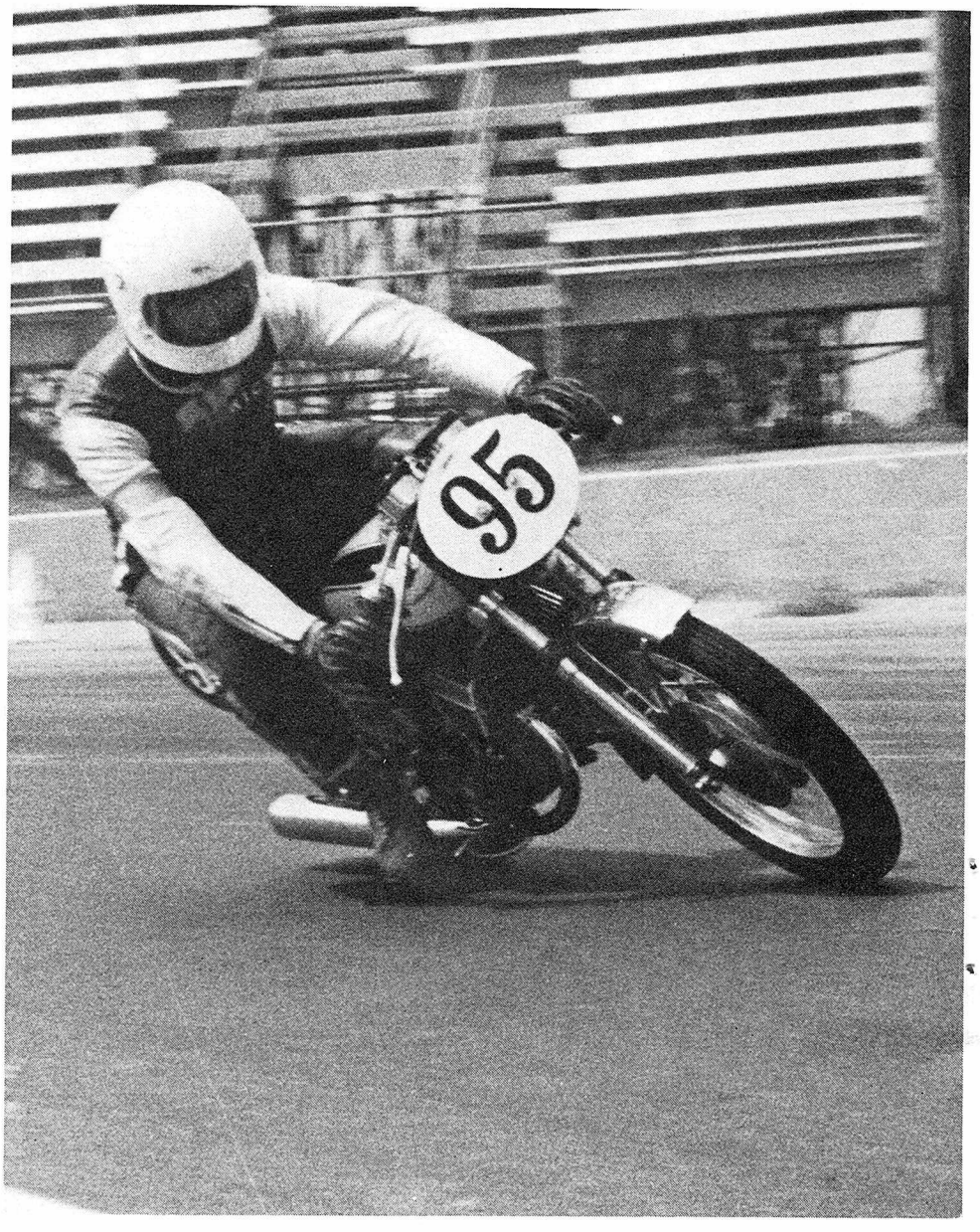


The limited angle of lean that a production machine offers can force some strange cornering antics with experts like Steve McLaughlin holding the machine more upright to gain a few more miles an hour.

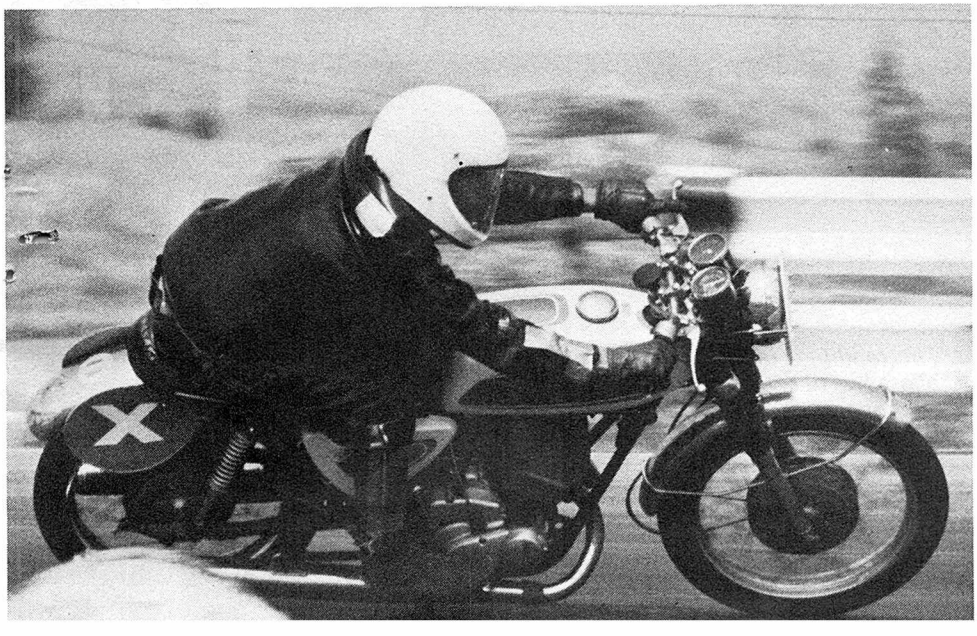


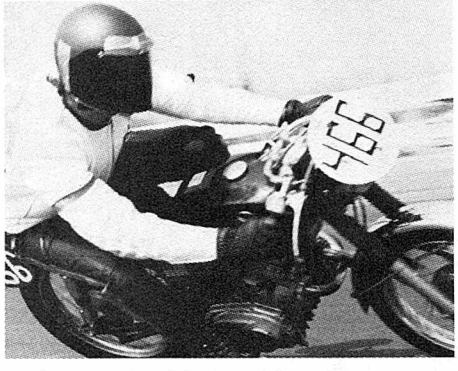




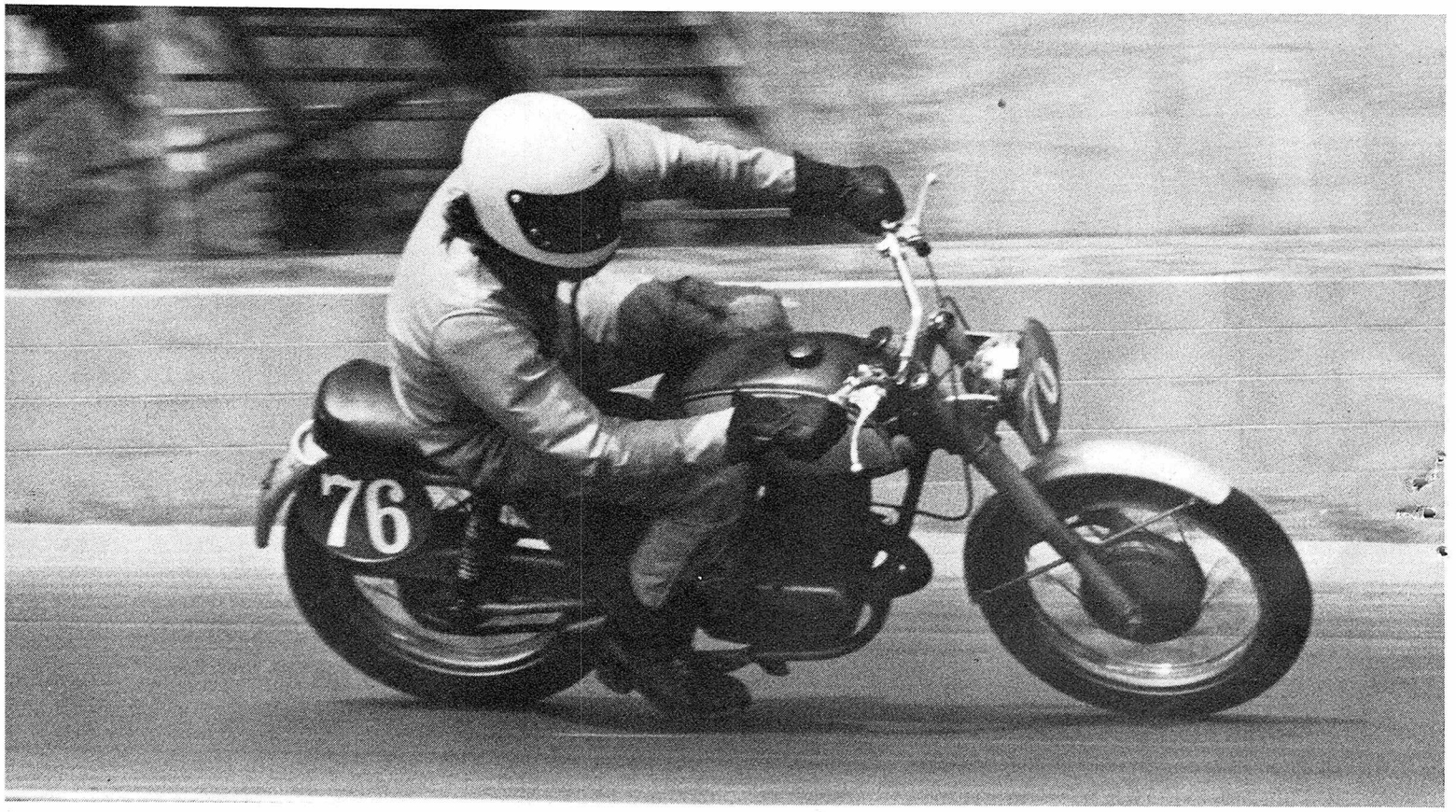


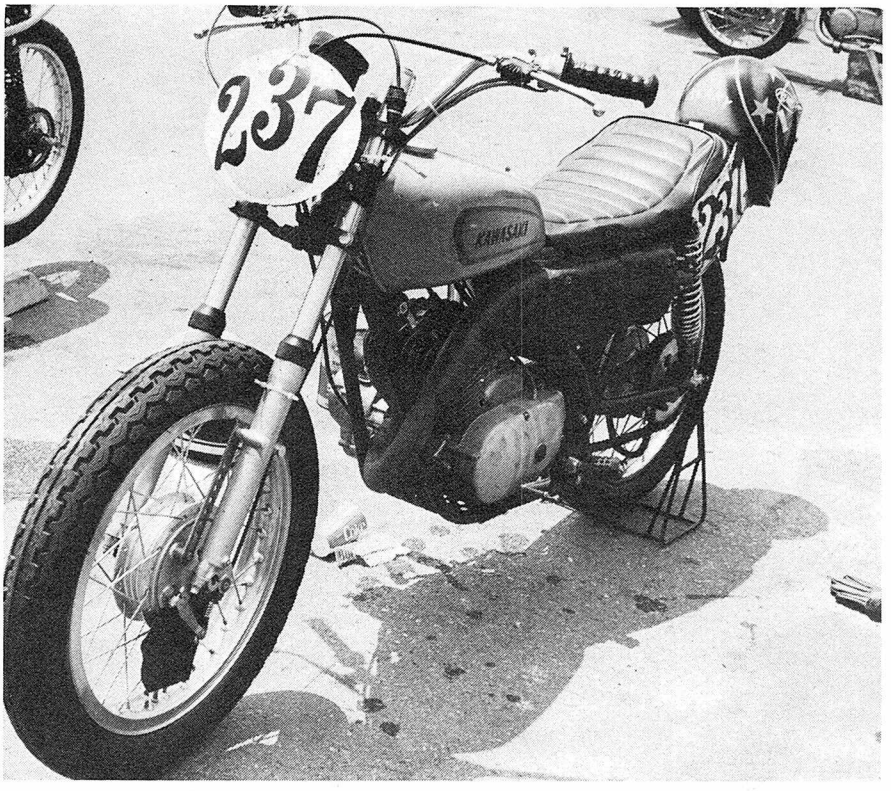
The Yamaha RD250 and RD350 twins are some of the quickest machines in the 250cc and 350cc classes. Minor changes like fuel filters and better jetting help with rear-mounted pegs and pedals for control.





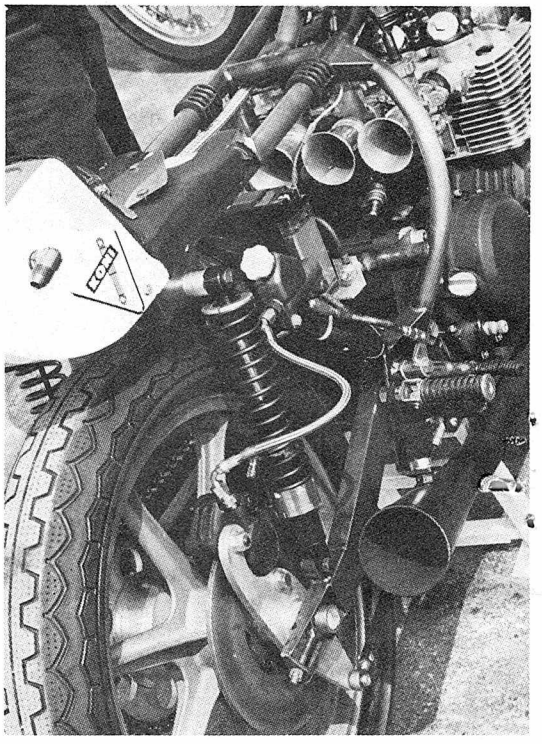
The Kawasaki, Suzuki and Honda small-displacement twins are quick enough to be competitive within their displacement classes. The racing rules require that drain plugs and the like be safety wired.



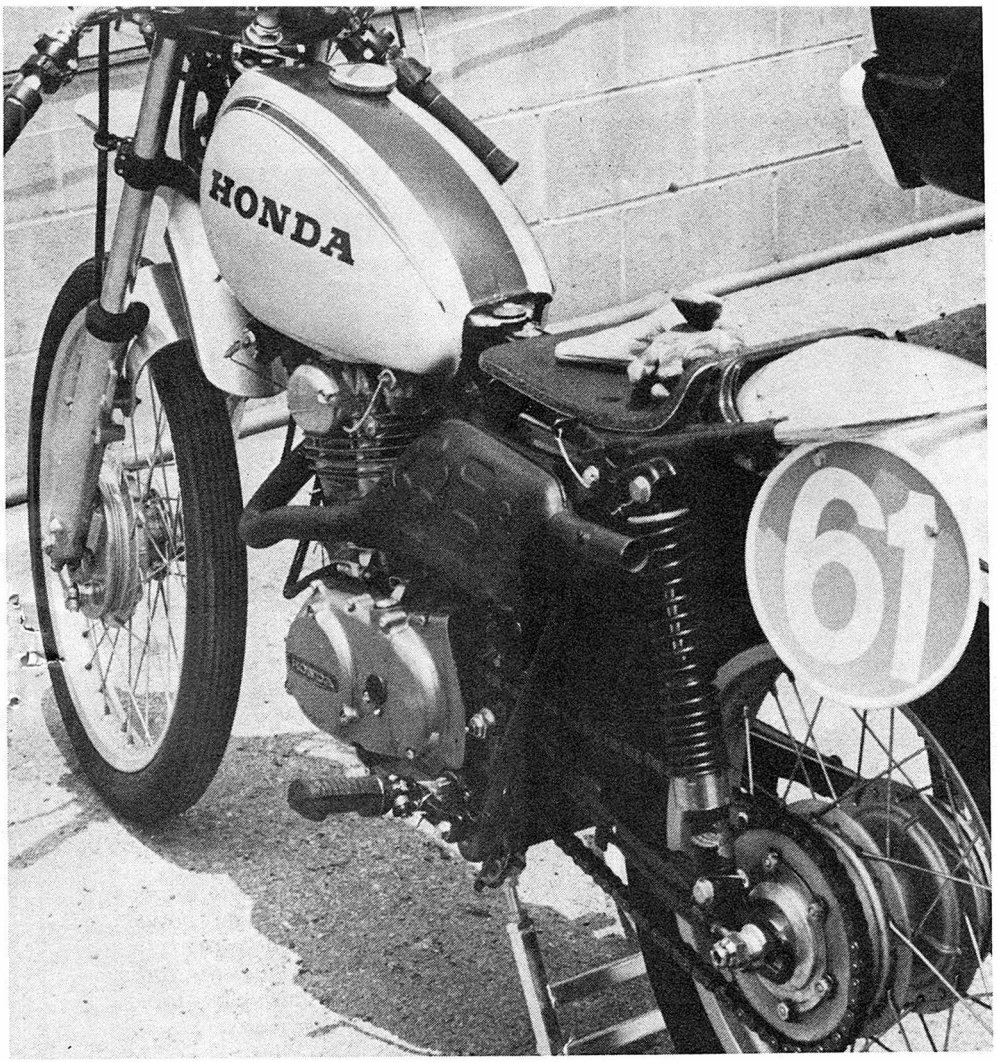


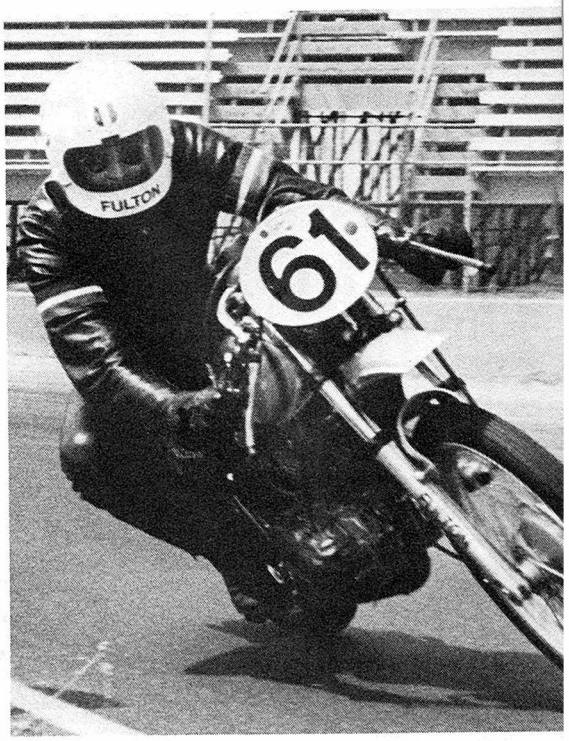
The Kawasaki factory is running some highly-modified versions of their F-9 350cc machines. Some dealers have found that the ''scrambler'' makes a raceworthy road racer with little more than a tire change.

There aren't many of these older OSSA ''Sport'' street machines in the country but they make excellent low-budget racers with some of the later moto-cross engine parts. Alloy rims were standard equipment.

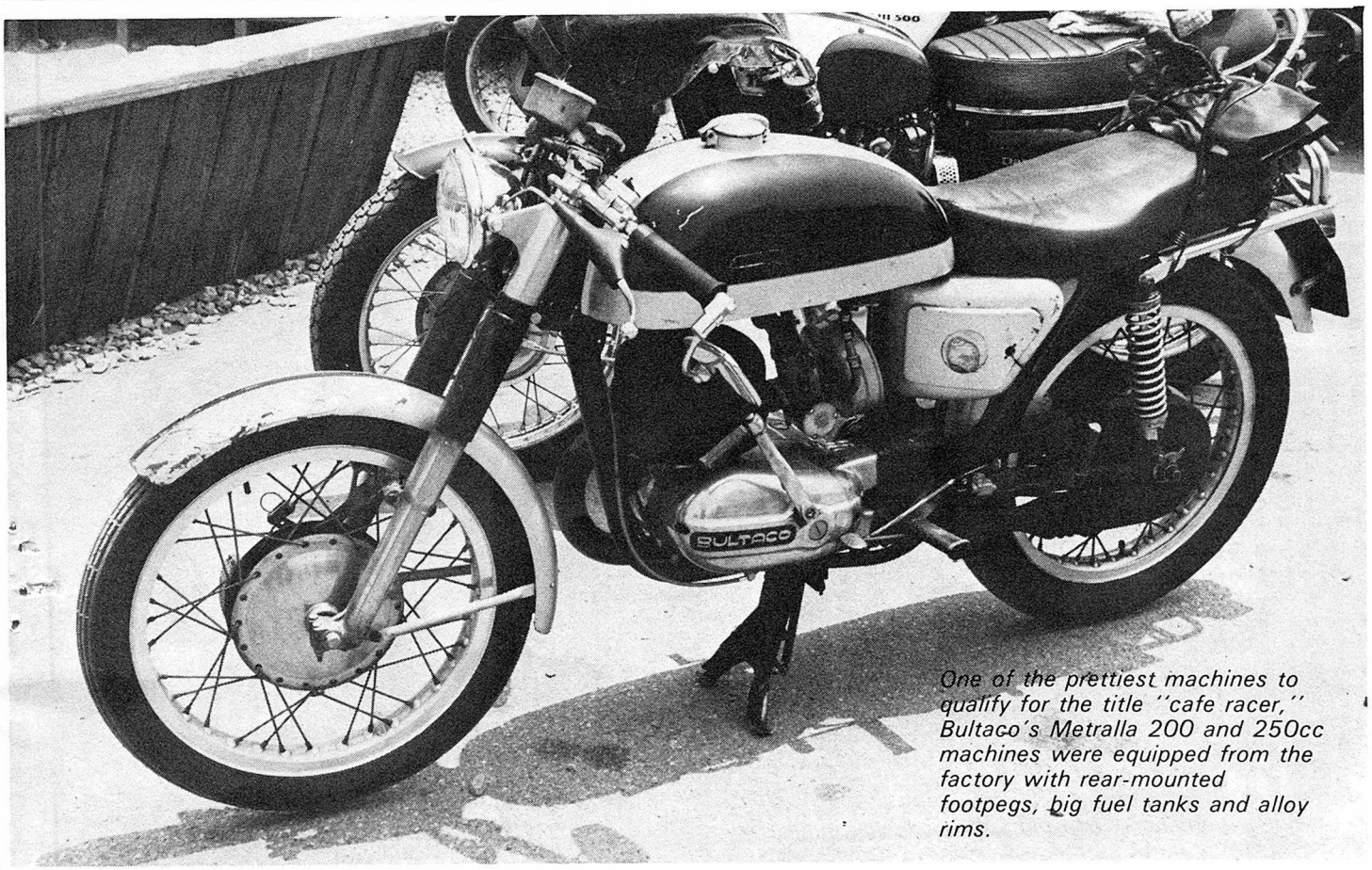


The modified Grand Prix class allows virtually any modification except the engine castings. Complex and expensive frames, disc brakes, and dynomometer-developed engines are essential for a winner.

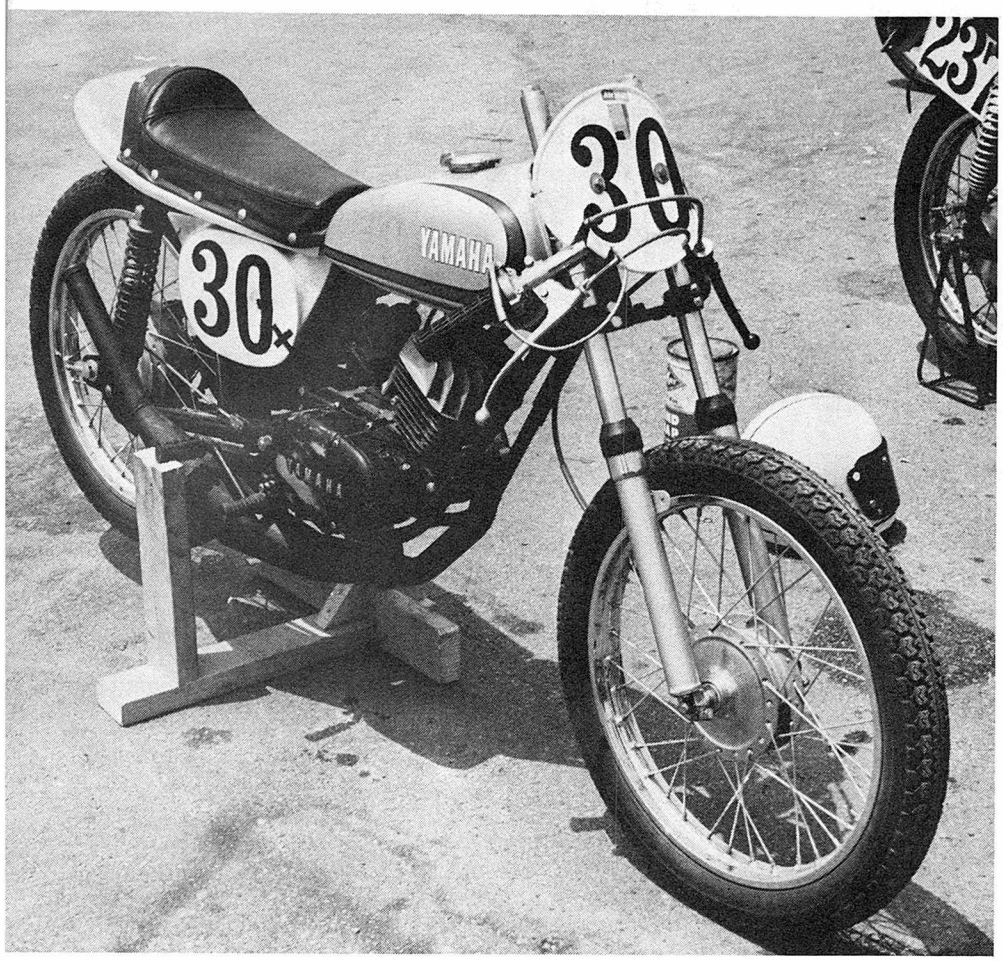


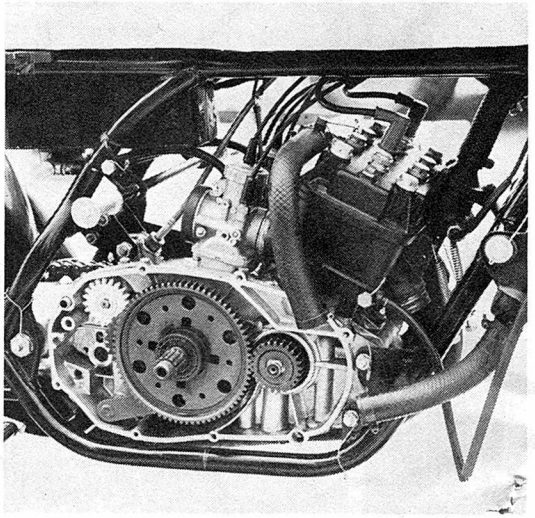


Honda's XL-250 trailbike seems an unlikely candidate for a road racer but its four-valve engine and stiff chassis lend themselves to the tire and handlebar and seat changes that can convert it for road use.



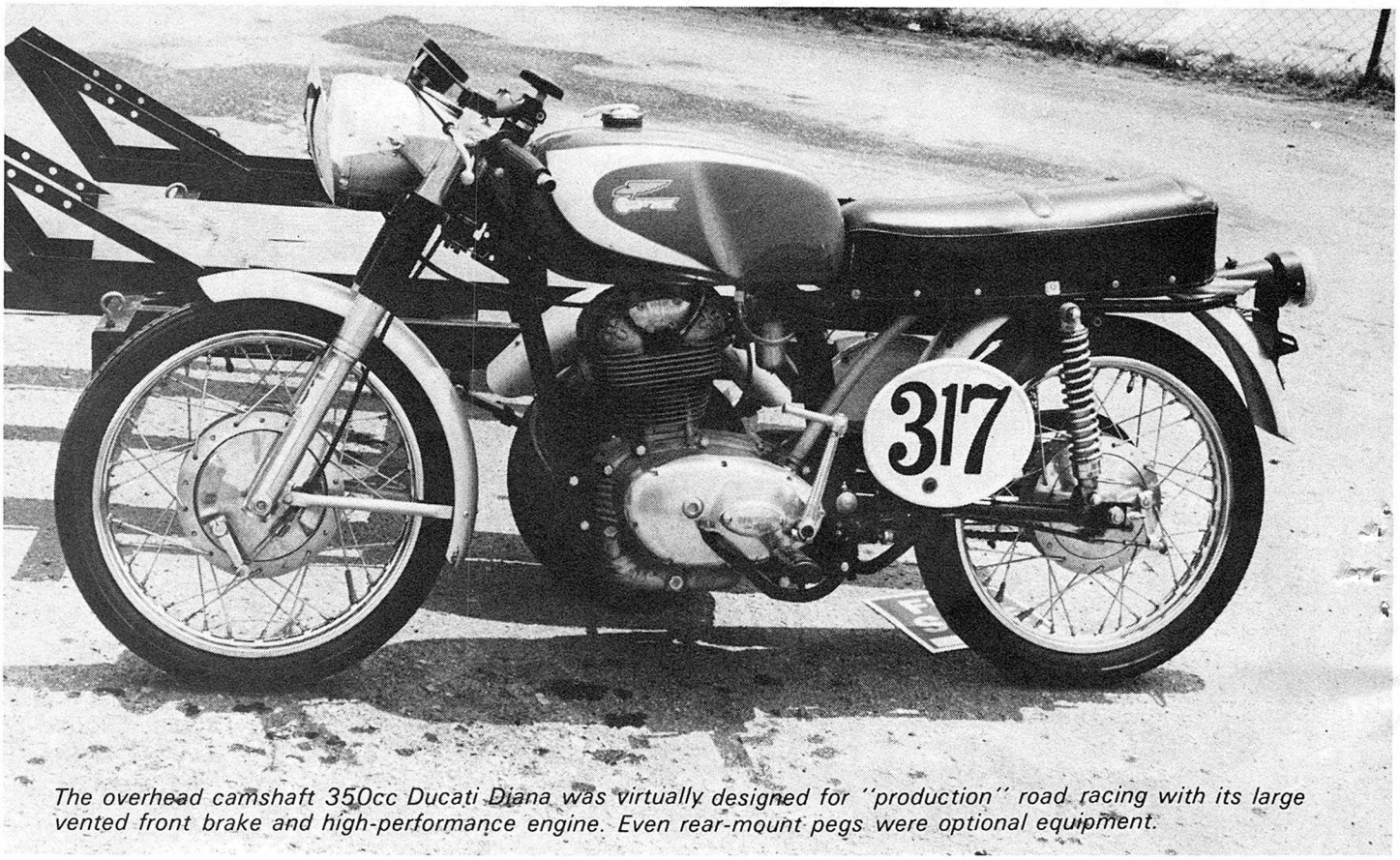
One of the prettiest machines to qualify for the title "cafe racer," Bultaco's Metralla 200 and 250cc machines were equipped from the factory with rear-mounted footpegs, big fuel tanks and alloy rims.





Yamaha produced over 200 of these water-cooled 250cc and 350cc twins. They've won most of the world's major road races, including Daytona and Ontario. They compete in the AMA's professional racing classes.

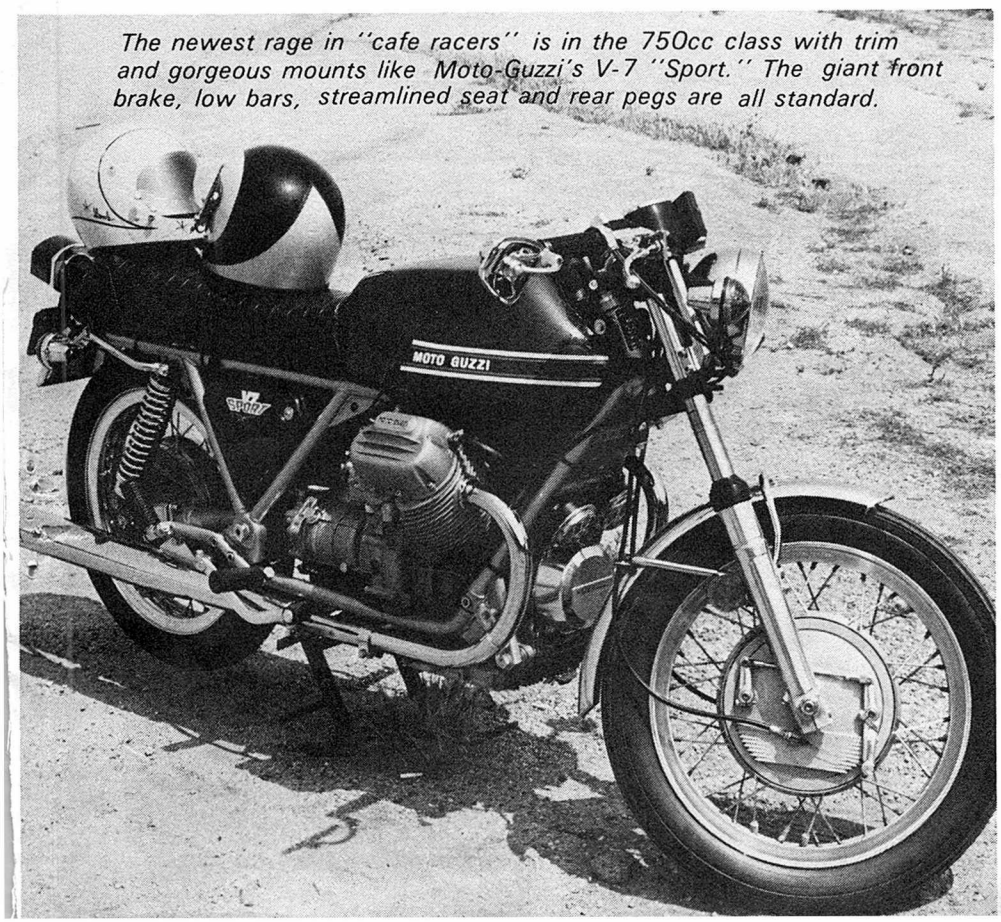
The small-displacement moto-cross machines seem to have the power and suspension to handle road racing as well. Note how the forks have been moved up in their triple clamps to lower this 90cc Yamaha.

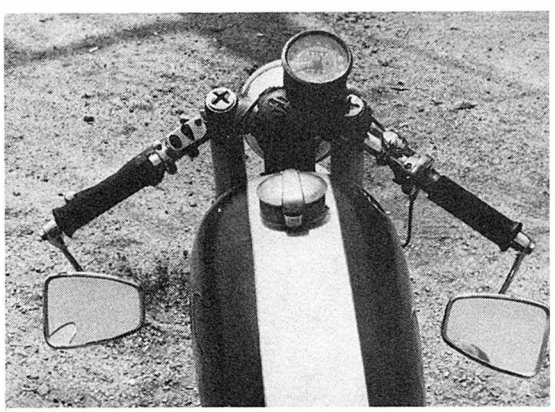


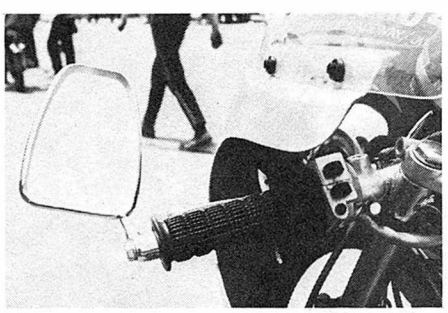
The overhead camshaft 350cc Ducati Diana was virtually designed for "production" road racing with its large vented front brake and high-performance engine. Even rear-mount pegs were optional equipment.

The 100cc rotary valve Kawasaki two-stroke moto-cross machines have been converted to road racers by several shops. This one has been modified to water cooling and it rests in a special chassis for GP racing.

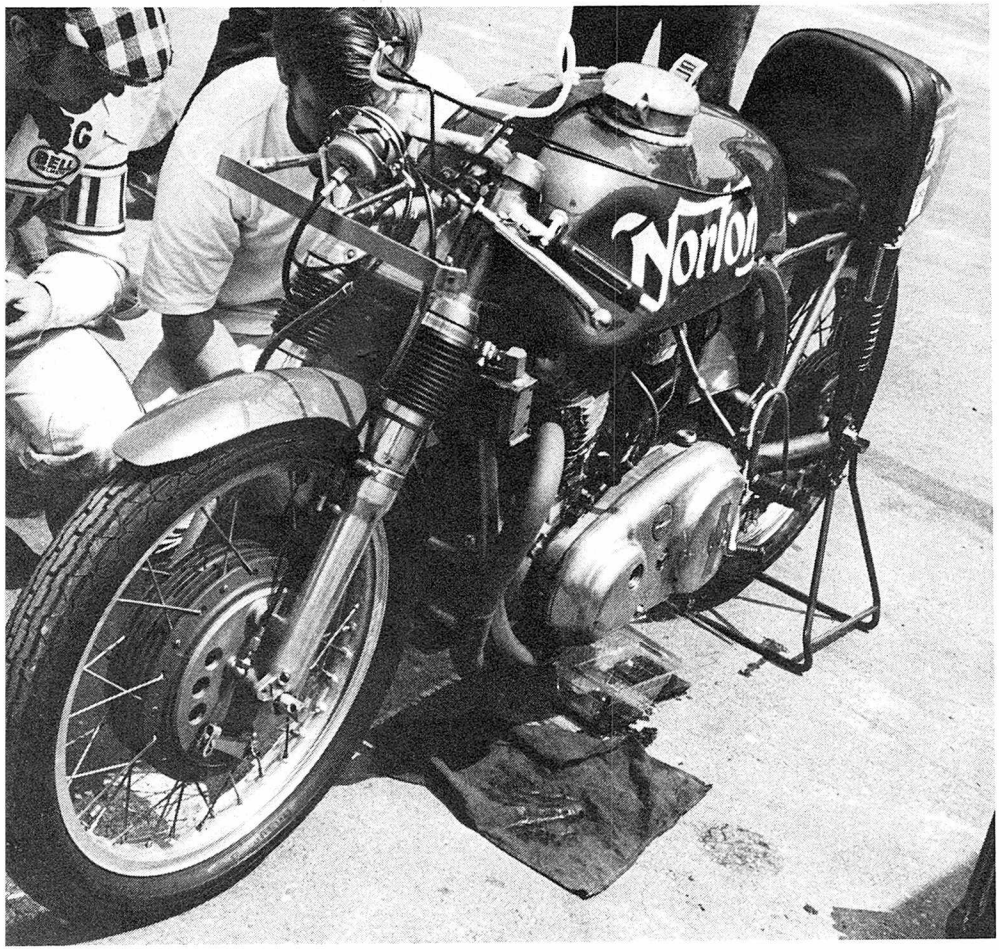
The newest rage in "cafe racers" is in the 750cc class with trim and gorgeous mounts like Moto-Guzzi's V-7 "Sport." The giant front brake, low bars, streamlined seat and rear pegs are all standard.

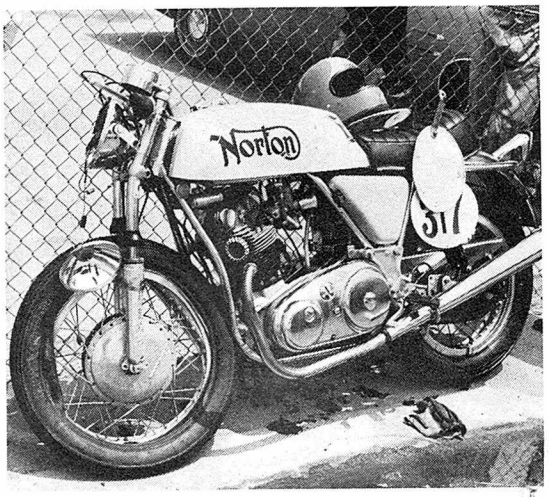






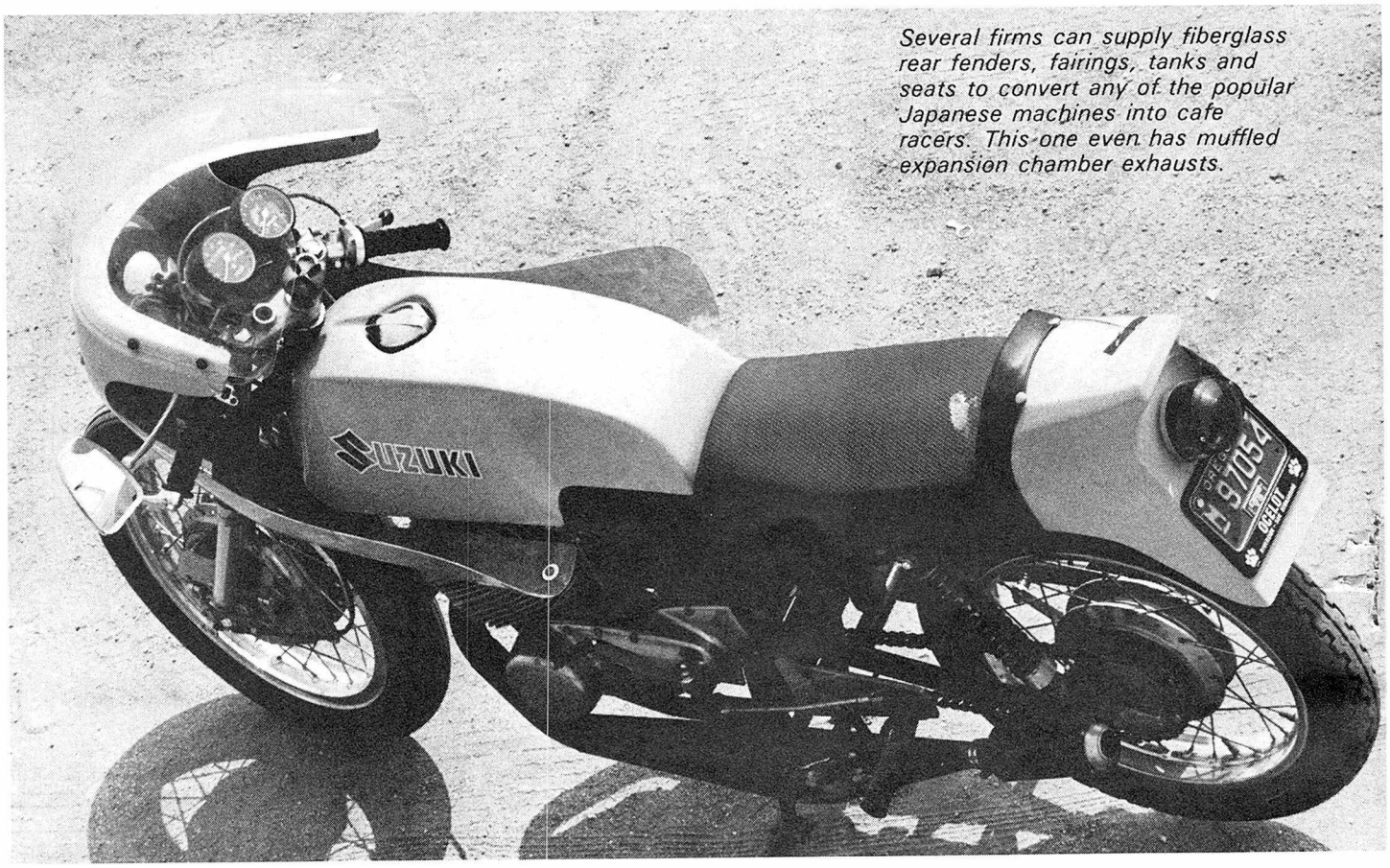
Two solutions to finding a place to mount rear view mirrors with a cafe racer's low-mount handlebars.





The rider of this "production" class Norton escaped with only a minor case of "pavement rash" but his machine hit the guard rail. Your racing budget should allow for such costly catastrophes.

This Norton 750cc modified "Commando" engine rests in an ex-factory road racing frame. Hybrids can be beautiful machines. You don't find forks or tanks or gas caps that big on any production machine!



Several firms can supply fiberglass rear fenders, fairings, tanks and seats to convert any of the popular Japanese machines into cafe racers. This one even has muffled expansion chamber exhausts.

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